The PHOTOFACT® Servicer

SET 545 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ SEPT. 1961

CONTENTS PHOTOFACT SET 545

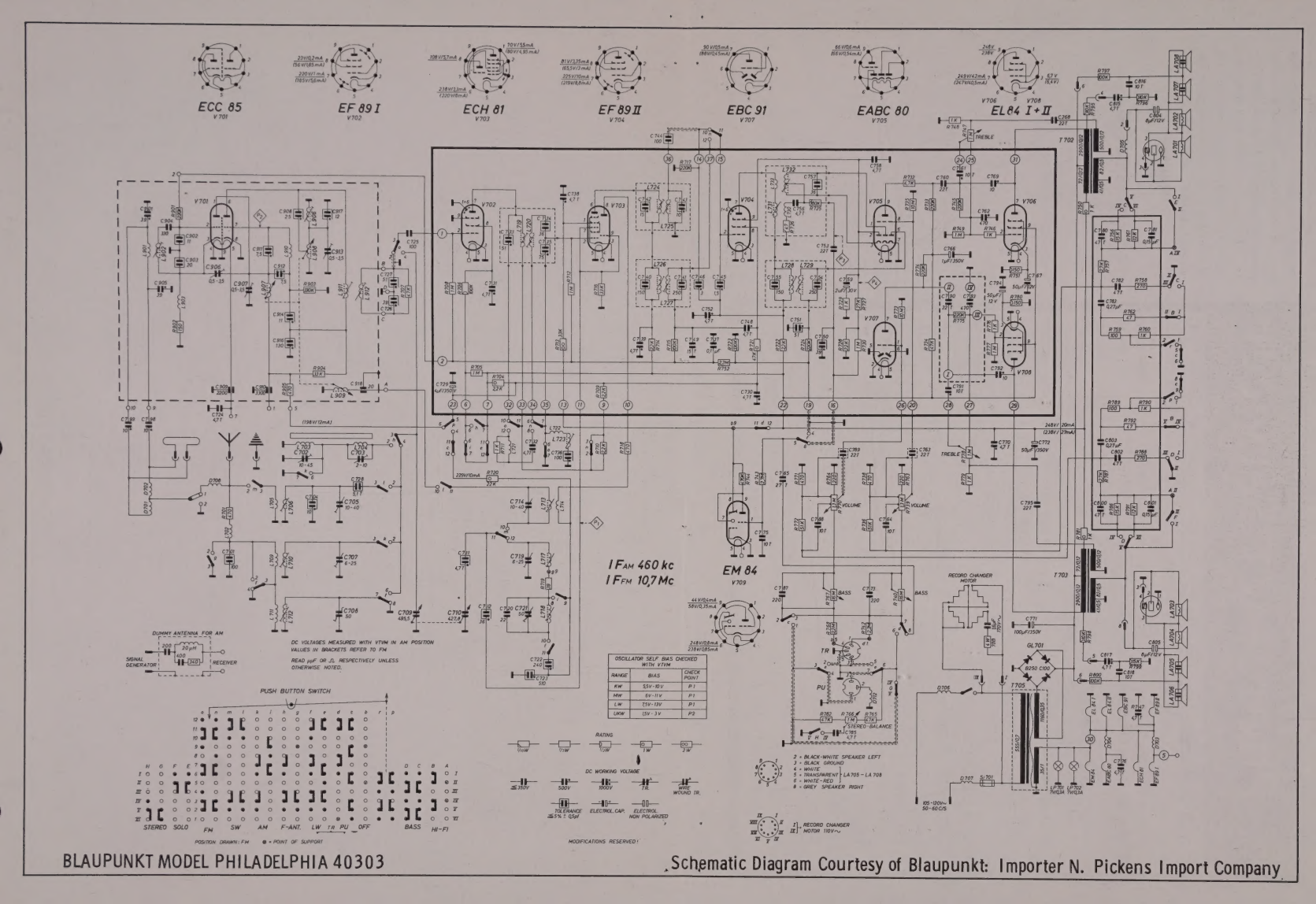
TRADE NAME AND MODEL	SET AND FOLDER NO.
TELEVISION RECEIVERS	
DUMONT	
Chassis 120482B, 523B, 543B, 563B, 568B, 602A, 603A, 604A, 605A	545-1
PACKARD-BELL	
19T1, 19T3, 19T3TC, 21C5, 21C6, 23C5, 23C6, 23C7, 23C8, 23T3, 24T2A (Ch. 88-8, 88-9)	545-2
OTHER EQUIPMENT	
AIRLINE	
JWR-1049A	545-3
BLAUPUNKT	
20003/20013 (Ballett)	545-4
DECCA	
DP-285	545-5
GLOBE	
CB-200	545-6
GOLDEN SHIELD	
6002-1 (Ch. 629-3)	545-7
GRUNDIG MAJESTIC	
SO111US, SO112US, SO121PX, SO121US, SO122US, SO142PX, SO142US	545-8
HEATH	
SA-2, W-SA-2	545-9
MOPAR	
404, 407	545-10
MOTOROLA	
SF15G, G-1, G-2, R, R-1, R-2 (Ch. HS-860, HS-898)	545-11
NORELCO	
L4X05T	545-12
PHILCO	
J-1525, J-1626	545-13
RCA VICTOR	
RP-215-1, RP-216-1 (Record Changer)	545-14
SILVERTONE	
1260 (Ch. 528.59090)	545-15
WESTINGHOUSE	
H-65ACS1, H-65ACS1A, H-65ACS2, H-65ACS2A, H-65ACS3 (Ch. V-2506-5)	545-16

This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

Blaupunkt Model Philadelphia 40303

Silvertone Model 1390 (CH. 185.10000)



BLAUPUNKT MODEL PHILADELPHIA 40303

Schematic Diagram Courtesy of Blaupunkt: Importer N. Pickens Import Company

CAPACITORS

	Part No.	
C1, C4	20-016	Tubular, .01 mfd., 600 v.
C2	20-026	Tubular, .02 mfd., 600 v.
C3	20-056	Tubular, .05 mfd., 600 v.
C5	25-1025	Electrolytic, 10 mfd., 25 v.
C6A–C6B	25-2040	Electrolytic, 20-40 mfd., 150 v.
C7	30-580	Trimmer, 5-80 mmfd.

MISCELLANEOUS PARTS

90-68	Fuse Holder
90-2019	"On-Off" Switch

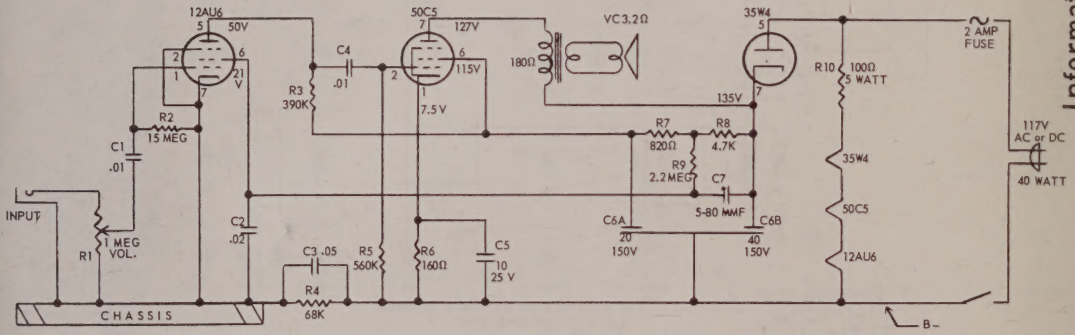
RESISTORS

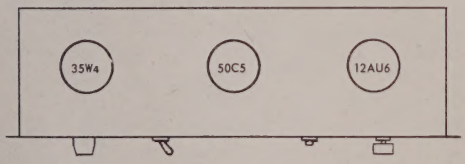
(All Resistors ½ watt unless otherwise noted)

	Part No.	
R1	22-10512	1 megohm, Volume
R2	18-15602	15 megohm, 20%
R3	18-39402	390K ohm, 20%
R4	18-68302	68K ohm, 20%
R5	18-56402	560K ohm, 20%
R6	18-16105	160 ohm, 5%
R7	18-82101	820 ohm, 10%
R8	18-47201	4.7K ohm, 10%
R9	18-22502	2.2 megohm, 20%
R10	18-10151	100 ohm, 10%, 5 watt

CABINET PARTS

Part No.	Description
90-32	Cabinet and Back
90-128	Leather Handle
90-88	Handle Hardware
90-832	6" Speaker with Output Transformer





NOTES:

1. VALUES OF CAPACITORS IN MFD. UNLESS OTHERWISE NOTED.
2. ALL RESISTORS ARE ½ WATT UNLESS OTHERWISE NOTED.
3. VOLTAGES MEASURED FROM POINTS INDICATED TO B– WITH 20,000 OHM/VOLT METER.

Information Courtesy of Sears, Roebuck & Company

SILVERTONE MODEL 1390 (CH. 185.10000)

PHOTOFACT® Folder with CIRCUITRACE®

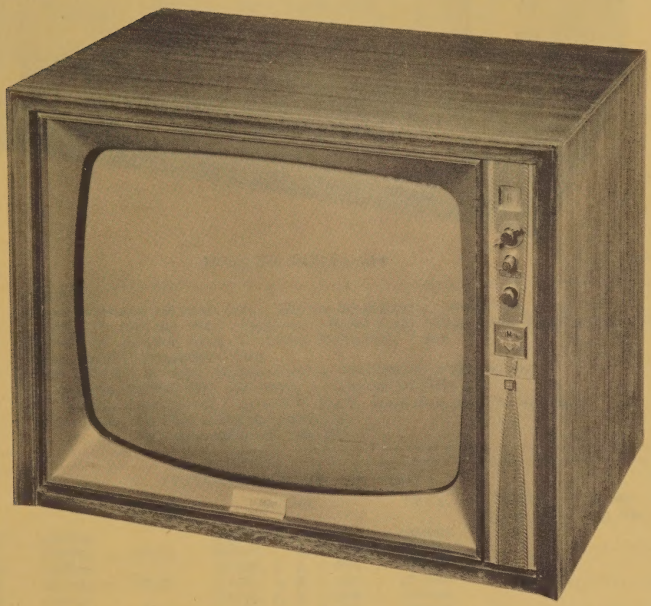
DUMONT CHASSIS 120482B, 523B, 543B, 563B, 568B, 602A, 603A, 604A, 605A

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

DUMONT CHASSIS 120482B, 523B, 543B, 563B, 568B, 602A, 603A, 604A, 605A



DUMONT CHASSIS 120482B, 523B, 543B, 563B, 568B, 602A, 603A, 604A, 605A

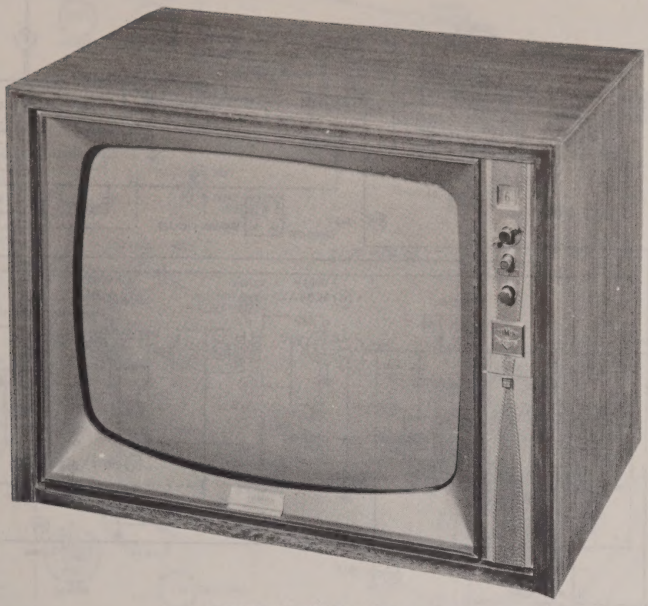
MODEL NO. RA700A-B50

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

DUMONT CHASSIS 120482B, 523B, 543B, 563B, 568B, 602A, 603A, 604A, 605A

DUMONT CHASSIS 120482B, 523B, 543B, 563B, 568B, 602A, 603A, 604A, 605A



MODEL NO. RA700A-B50

TRADE NAME	DUMONT
MANUFACTURER	Dumont Television and Radio Corp., 14th and Coles Streets, Jersey City, N. J.
TUBES	TV (VHF) Ch. 120602A, 604A - Eighteen. FM-AM Tuner - Eight Remote Control Receiver - Seven TV (VHF) Ch. 120603A, 605A - Seventeen. Stereo Amp. - Nine
TRANSISTORS	Remote Control Transmitter - Two
POWER SUPPLY	110-120 Volts AC, 60 Cycle (Remote Control Transmitter: 9 Volt Battery)
RATING	TV Model No. RA700A-B50: 200 Watts, 1.8 Amp. @ 117 Volts AC
TUNING RANGE	TV: Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier) FM-AM Tuner: BC - 540 to 1620 KC (455KC IF) FM - 88 to 108MC (10.7MC IF)

TV CHASSIS CODES Ⓐ, Ⓑ, Ⓒ.

Model No.	TV Ch.	Remote Control	Model No.	TV Ch.	FM-AM Tuner Ch.	Stereo Amp. Ch.	Remote Control
RA700, A, B, C-B50 ...	120602A		RA700, A, B, C-B64 ...	120602A			
RA700, A, B, C-B51 ...	120604A ...	471281	RA700, A, B, C-B65 ...	120604A ...			471281
RA700, A, B, C-B52 ...	120602A		RA700, A, B, C-B66 ...	120602A			
RA700, A, B, C-B53 ...	120604A ...	471281	RA700, A, B, C-B67 ...	120604A ...			471281
RA700, A, B, C-B54 ...	120602A		RA700, A, B, C-B68 ...	120602A			
RA700, A, B, C-B55 ...	120604A ...	471281	RA700, A, B, C-B69 ...	120604A ...			471281
RA700, A, B, C-B56 ...	120602A		RA704, A, B, C-B70 ...	120603A ...	120523B ...	120543B	
RA700, A, B, C-B57 ...	120604A ...	471281	RA704, A, B, C-B71 ...	120605A ...	120523B ...	120563B ...	471284
RA700, A, B, C-B58 ...	120602A		RA704, A, B, C-B72 ...	120603A ...	120523B ...	120543B	
RA700, A, B, C-B59 ...	120604A ...	471281	RA704, A, B, C-B73 ...	120605A ...	120523B ...	120563B ...	471284
RA700, A, B, C-B60 ...	120602A		RA704, A, B, C-B74 ...	120603A ...	120523B ...	120543B	
RA700, A, B, C-B61 ...	120604A ...	471281	RA704, A, B, C-B75 ...	120605A ...	120523B ...	120563B ...	471284
RA700, A, B, C-B62 ...	120602A		RA704, A, B, C-B76 ...	120603A ...	120482B ...	120568B	
RA700, A, B, C-B63 ...	120604A ...	471281	RA704, A, B, C-B77 ...	120605A ...	120482B ...	120568B ...	471284

4 SPEED AUTOMATIC RECORD CHANGER (DUMONT Pt. #819156) USED IN "RA704" SERIES.
FOR SERVICE INFORMATION - SEE SIMILAR GARRARD RC88 SERIES - PHOTOFACT SET 338 FOLDER 5

SEE PAGE 3 FOR SERVICING IN THE FIELD

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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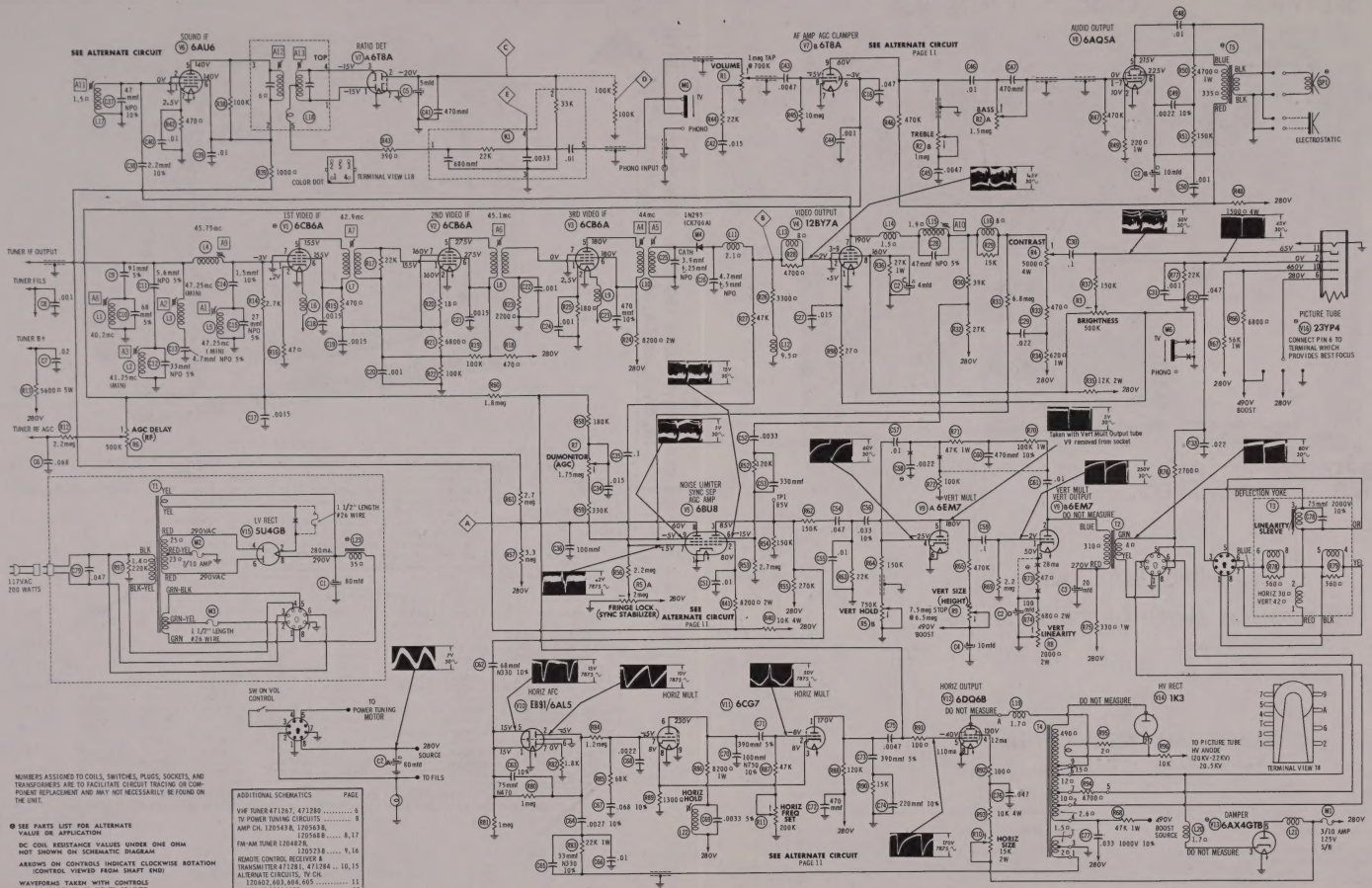

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

ADDITIONAL SCHEMATICS	PAGE
VHF TUNER 471267, 471280	6
TV POWER TUNING CIRCUITS	8
AMP CH. 120543B, 120563B, 120568B	8, 17
FM-AM TUNER 120482B, 120523B	9, 16
REMOTE CONTROL RECEIVER & TRANSMITTER 471281, 471284	10, 15
ALTERNATE CIRCUITS, TV CH. 120602, 603, 604, 605	11
UHF TUNER 89014455	19

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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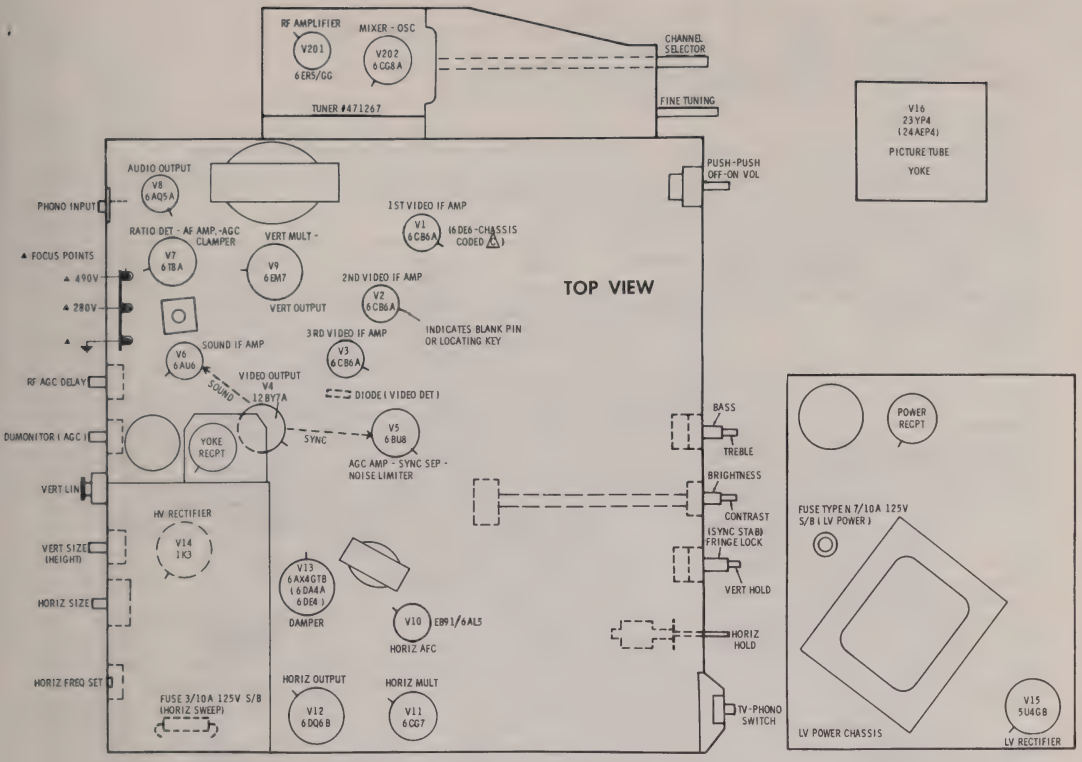
DUMONT CHASSIS 120482B, 523B, 543B, 563B, 568B, 602A, 603A, 604A, 605A

TV TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (LV Power), V15, Fuse Wire (Fil.)

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, Fuse (Sweep), V16
No vertical deflection V9
Poor vert. linearity or foldover V9
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, V15
Vert. off freq. V9
Horiz. off freq. V10, V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V6, V7, V8
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5, V10
No vert. or horiz. sync V5

SERVICING IN THE FIELD

SAFETY GLASS

The safety glass is an integral part of the picture tube.

FUSE

TV: A 7/10 Amp. (LV Supply) and a 3/10 Amp. (Horiz. Sweep) are used for receiver protection. (See "Tube Placement Chart" for location.)
A fuse wire is used for filament protection. (See M3 in photo "TV LV Power Chassis - Bottom View".)

Stereo Amp.: A ½ Amp. fuse is used for LV supply protection.

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, it is necessary to remove the chassis. (See "Disassembly Instructions".)

AGC

The AGC may be adjusted by a Dumonitor control and an RF AGC delay control. (See "Tube Placement Chart" for location.)

FOCUS

The focus may be varied by connecting the lead from Pin 6 of the picture tube to various voltage points. (For location, see "Tube Placement Chart".)

SYNC STABILITY

Sync stability may be varied by means of a Fringe Lock control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold.

WIDTH

The width may be varied by a Horizontal Size control. (See Tube Placement Chart" for location.)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (A13) located at top of chassis.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

ALIGNMENT INSTRUCTIONS
TV

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a variable bias supply to point (A). Positive to chassis. For steps 1 thru 5, set bias for 4.5 volts.
For step 6, set bias for 3 volts.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication.
Use only enough sweep generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side to ungrounded tube shield floating over Mixer-Osc. Low side to chassis.	Not Used	47.25MC (Unmod.)	Any non-interfering channel	USE VTVM DC probe to point (B). Common to chassis. (Across Video Det. load.)	A1, A2	Adjust for MINIMUM deflection.
2.	"	"	41.25MC	"	"	A3	"
3.	"	"	44.0MC	"	"	A4, A5	Adjust for maximum deflection.
4.	"	"	45.1MC	"	"	A6	"
5.	"	"	42.9MC	"	"	A7	"
6.	"	43.5MC (10MC Swp.)	40.2MC 41.25MC 42.25MC 44.0MC 45.75MC 47.25MC	"	Vert. Amp. thru detector probe to pin 5 (plate) of 1st Video IF Amp. Low side to chassis.	A8, A9 & Mixer Plate Coil	Adjust A8 for 40.2MC kickback peak as in Fig. 1. Adjust A9 and Mixer Plate Coil for response similar to Fig. 1 with markers as shown.

4.5MC TRAP ALIGNMENT

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	High side thru .001mfd to point (B). Low side to chassis.	Not Used	4.5MC (400~ AM)	Any non-interfering channel	Vert. Amp. thru detector probe to pin 11 of picture tube. Low side to chassis.	A10	Adjust for MINIMUM 400~ indication.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point (C) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.
A TV station signal may be substituted for the signal generator if a generator of crystal accuracy is not available.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	High side thru .001mfd to point (B). Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	DC probe to point (C). Common to chassis.	A11, A12	Adjust for maximum deflection.
9.	"	"	"	DC probe to point (E). Common to point (D).	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

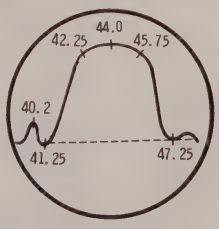
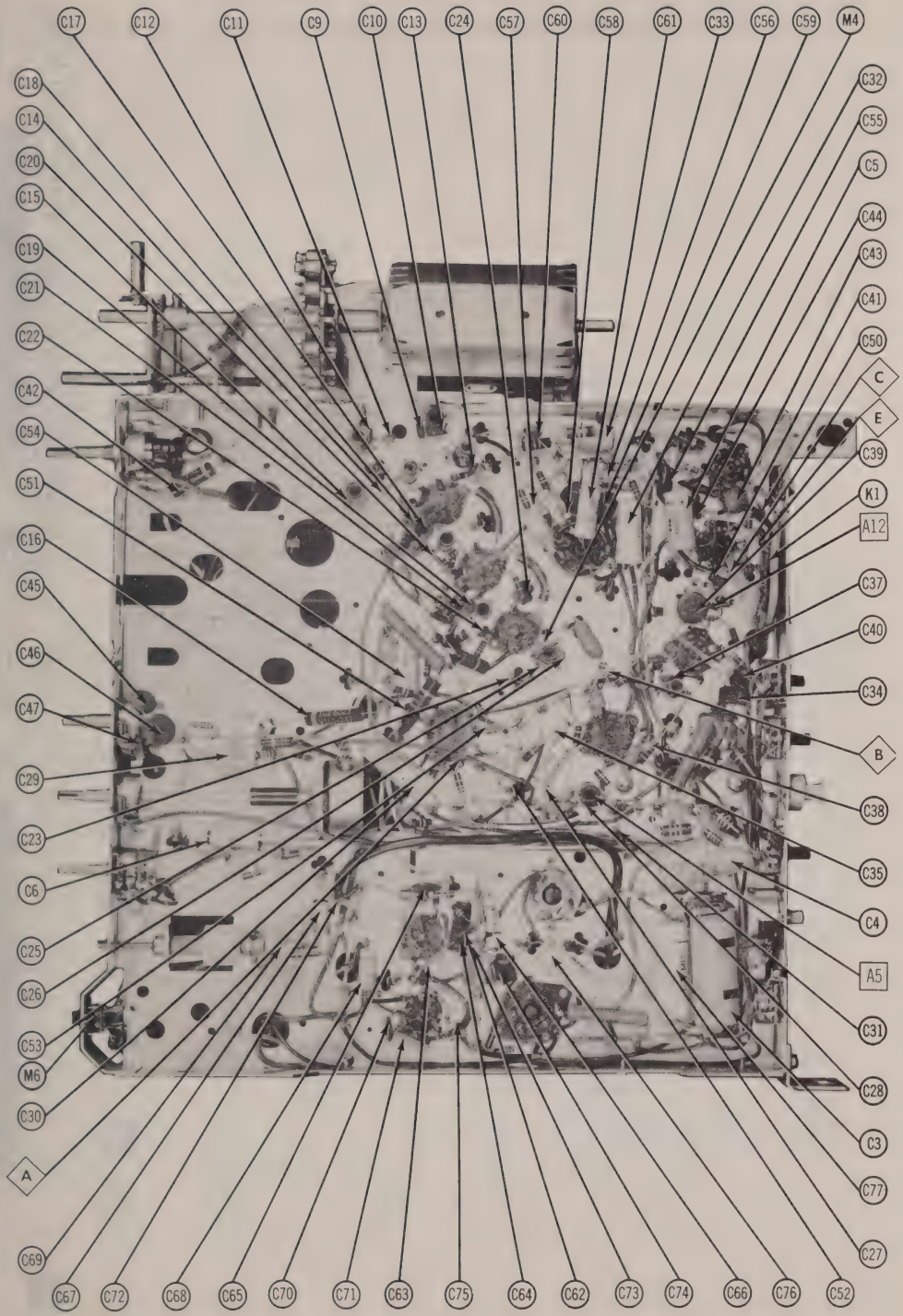


FIG.1



TV CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR, MISC. IDENT.

SET 545 FOLDER 1

TOP VIEW

BOTTOM VIEW

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

A Howard W. Sams CIRCUIT RACE® Photo

VHF TUNER 471267, 471280

VHF TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC • USE	GENERAL ELECTRIC • TYPE	ITEM No.	RAYTHEON • SYLVANIA • USE	RAYTHEON • SYLVANIA • TYPE
V201	RF Amp.	6ER5/GG	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	30							
C206	39							
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	1000		EF-001	MFT-1000		CCF-102	CT280A	
C209	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-2K	5HK-D10
C210	1000		EF-001	MFT-1000		CCF-102	CT280A	
C211	1.8-7							
C212	100							
C213	.5-3							
C214	33							
C215	.5-3							
C216	1.5	10%	NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-S15	10TCC-V15
C217	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-2K	5HK-D10
C218	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-2K	5HK-D10
C219	7.25							
C220	18							
C221	1000		EF-001	MFT-1000		CCF-102	CT280A	
C222	1000		EF-001	MFT-1000		CCF-102	CT280A	
C223	1000							

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No	WORKMAN TV PART No	REMARKS
R201	33000Ω 1W			
R202	47K			
R203	10000Ω			
R204	27000Ω			
R205	220K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R206	1000Ω			
R207	22K			
R208	4700Ω			
R209	10K			

UHF TUNER 89014455

DUMONT CHASSIS 1204828, 523B, 543B, 563B, 568B, 602A, 603A, 604A, 605A

FOLDER 1

FM–AM ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT
Use only enough generator output to provide a usable indication.

AM ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ 30% AM)	AM Tuning gang fully open	AC probe across Audio Output Jack.	A14, A15, A16, A17	Adjust for maximum deflection.
2.	Loop	1600KC	1600KC	"	A18, A19	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A20	Adjust for maximum deflection. Repeat steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

AFC off.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	FM Point of non-interference	DC probe thru 1meg to point (F). Common to chassis.	A21, A22, A23, A24, A25, A26, A27	Adjust for maximum deflection.
5.	"	"	"	DC probe to point (G). Common to chassis.	A28	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

AFC off.
Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp.)	FM Point of non-interference	Vert. Amp. thru 47K to point (F). Low side to chassis.	A21, A22, A23, A24, A25, A26, A27	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.
5.	"	"	"	Vert. Amp. to point (G). Low side to chassis.	A28	Adjust to place marker at center of crossover lines similar to Fig. 3. SLIGHTLY retouch A21 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

AFC off.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	108MC (Unmod.)	FM 108MC	DC probe thru 1meg to point (F). Common to chassis.	A29, A30, A31	Adjust for maximum deflection.
7.	"	88MC	88MC	"	A32, A33, A34	Adjust for maximum deflection. Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

FIG. 2

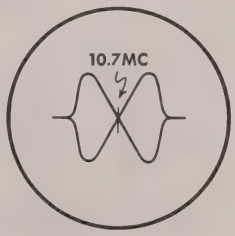
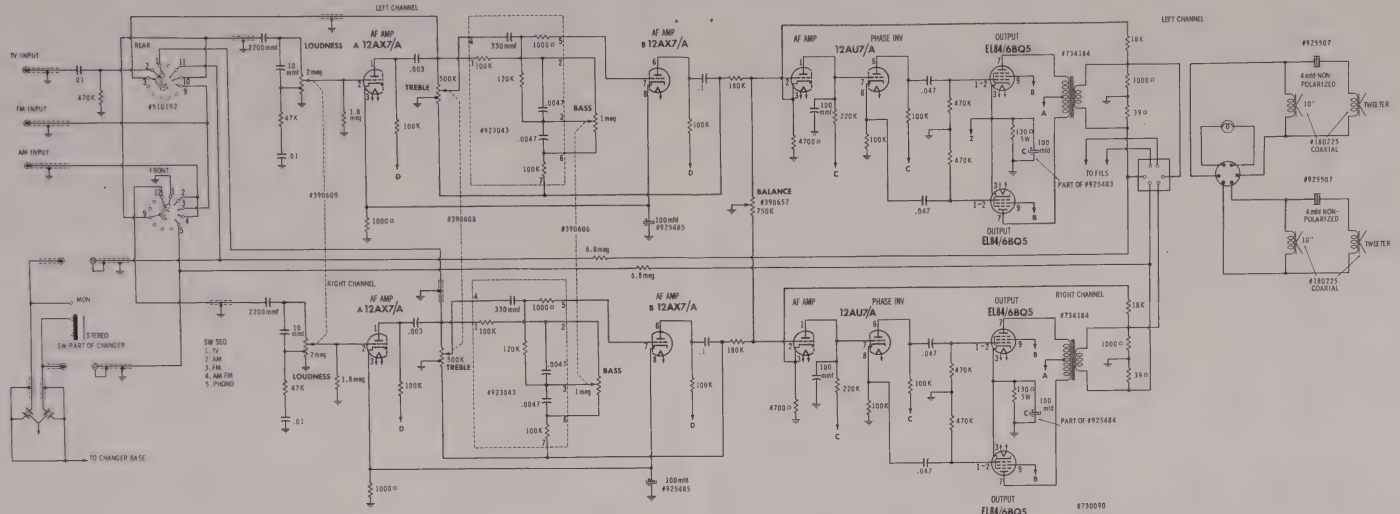


FIG. 3



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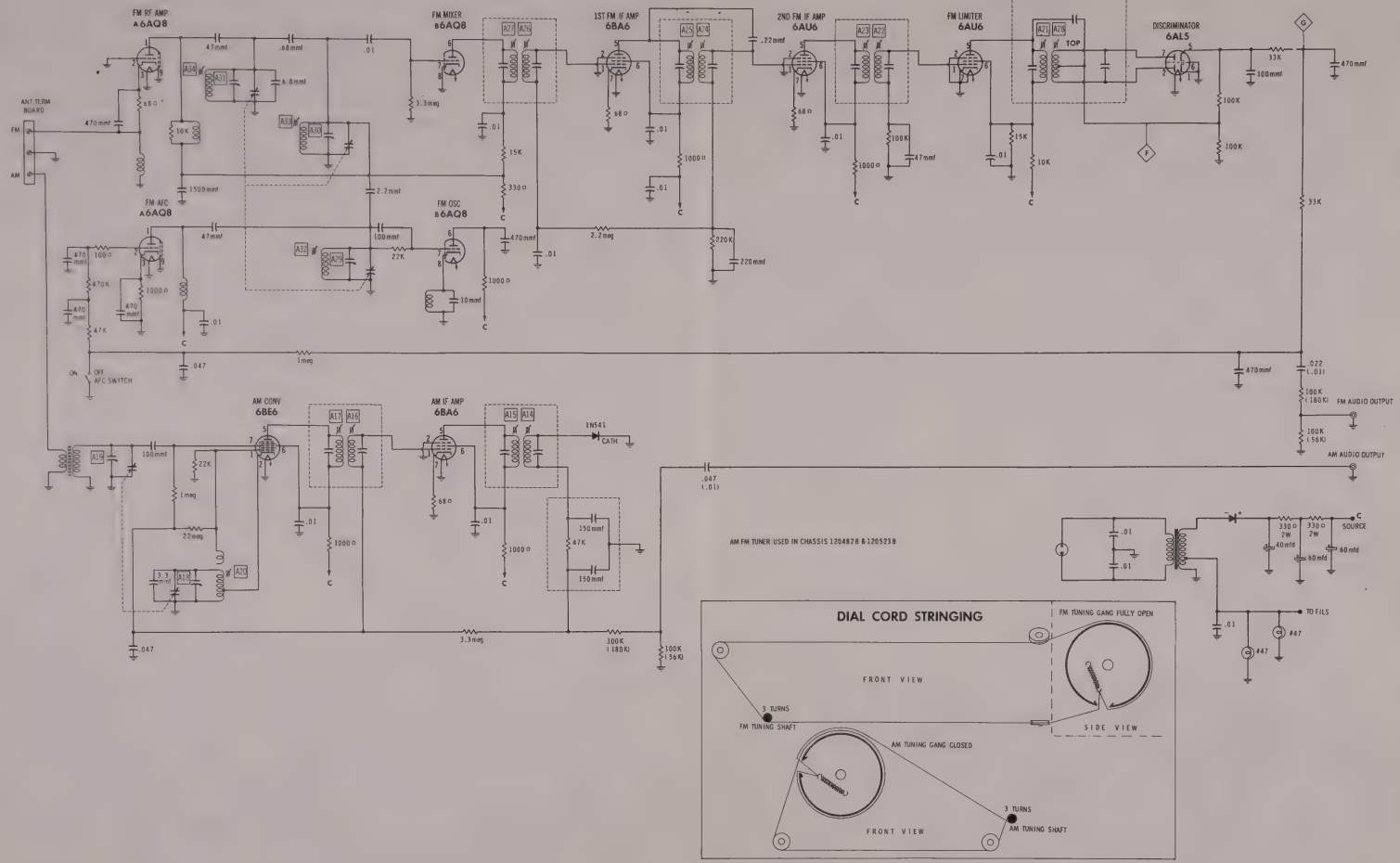
TV POWER TUNING CIRCUITS

AMP. CHASSIS 120543B, 563B, 568B



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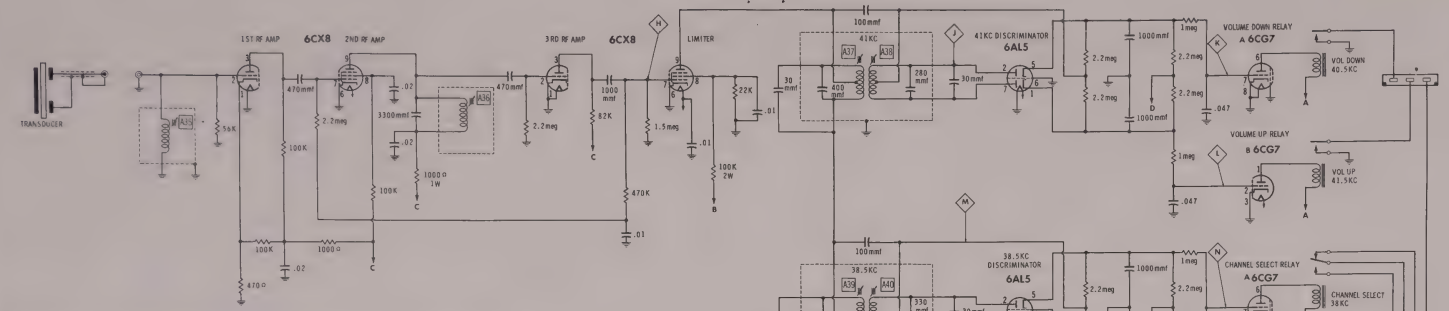
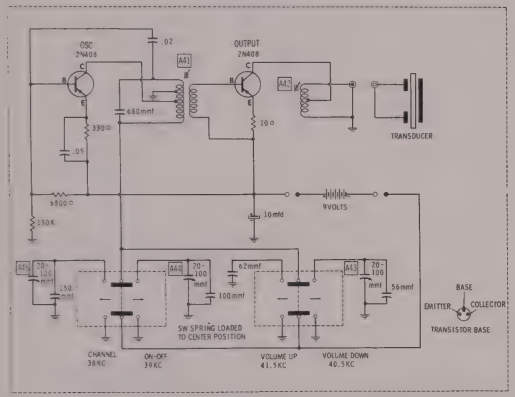
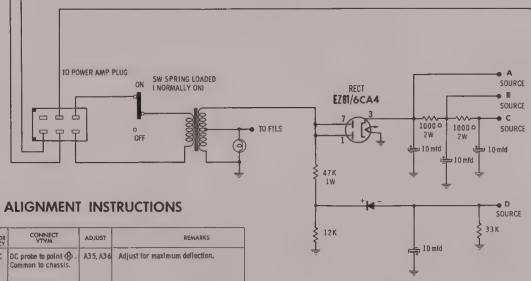
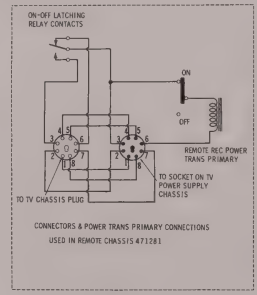
FM-AM TUNER 120482B, 120523B









ALIGNMENT INSTRUCTIONS

REMOTE CONTROL TRANSMITTER

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
1.	Across horizontal input terminals of xmtr.	41.5KC (Unmod.)	Vert. Amp. thru 1 meg to transmitter socket. Low side to common.	A41	Depress Volume Up button. Set signal generator output to same level as transmitter. Adjust A41 for zero beat on scope.
2.	"	40.5KC	"	A42, A43	Depress Volume-Down button and adjust A42 and A43 for zero beat.
3.	"	39.0KC	"	A44	Depress On-Off button and adjust A44 for zero beat.
4.	"	38.0KC	"	A45	Depress Channel Selector button and adjust A45 for zero beat.

ALIGNMENT INSTRUCTIONS

REMOTE CONTROL RECEIVER

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru 100K to transducer input socket. Low side to chassis.	39.75KC (Unmod.)	DC probe to point Ⓗ. Common to chassis.	A35, A36	Adjust for maximum deflection.
2.	"	41.0KC	DC probe thru 1 meg to point Ⓘ. Common to chassis.	A37	"
3.	"	"	DC probe to point Ⓘ. Common to point Ⓙ.	A38	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
4.	"	38.5KC	DC probe to point Ⓜ. Common to chassis.	A39	Adjust for maximum deflection.
5.	"	"	DC probe to point Ⓜ. Common to point Ⓛ.	A40	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

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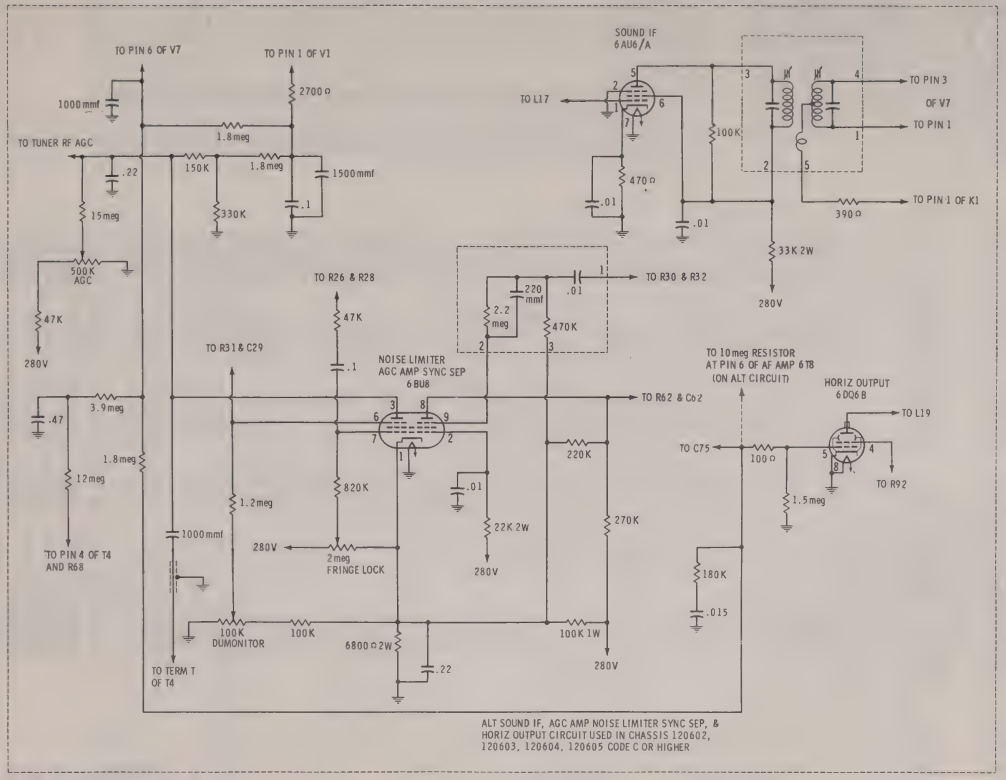
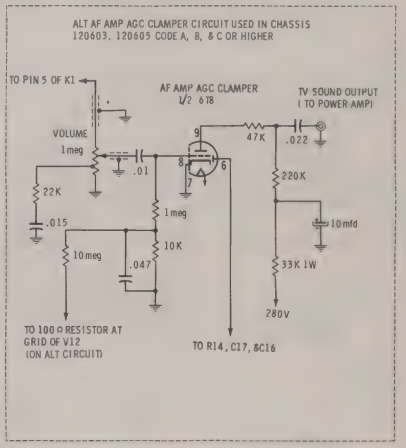
REMOTE CONTROL RECEIVER & TRANSMITTER 471281, 471284





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ALTERNATE CIRCUITS

DUMONT CHASSIS 120482B, 523B, 543B, 563B, 568B, 602A, 603A, 604A, 605A

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC • USE	GENERAL ELECTRIC • TYPE	RAYTHEON • USE	RAYTHEON • TYPE	SYLVANIA • USE	SYLVANIA • TYPE
V1	1st Video IF Amp.	6CB5A (6DE6) ▲	V8	Audio Output	V8	6AQ5A
V2	2nd Video IF Amp.	6CB5A	V9	Vert. Mult. - Vert. Output	V9	6EM7
V3	3rd Video IF Amp.	6CB5A	V10	Horiz. AFC	V10	EB91/6AL5
V4	Video Output	12BY7A	V11	Horiz. Mult.	V11	6CG7
V5	AGC Amp. - Sync Sep. - Noise Limiter	6BU8	V12	Horiz. Output	V12	6DQ6B
V6	Sound IF Amp.	6AU6	V13	Damper	V13	6AX4GTB (6DA4A, 6DE4) *
V7	Ratio Det. - AF Amp. - AGC Clamper	6T8A	V14	HV Rectifier	V14	1X3
			V15	LV Rectifier	V15	5U4GB

▲ Used in Chassis coded ⚠ or higher. * Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: DUMONT PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V16	23YP4 24AEP4	24AEP4 ①	23YP4 ① 24AEP4 ①	24AEP4 ①	23YP4 ③ 24AEP4 ③	① Aluminized ③ Silver Screen "B6"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DUMONT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	80	400	03190803	AFH1-47	A0430	FP149	TMB-1170	TVL-1735	
C2A	▲80	400	03190348	AFH4-57-85	D0477.5	FP431.7	TMT-3501	TVA-4670.9 *	
B	▲40	400				C7697	TTD-100-50		
C	▲4	400							
D	100	50							
C3	20	400	926538	PRH1735	BR3045	TC75	TD-20-450	TVA-1709	
C4	10	500	926540	PRH1810	BR1288	TC83	TD-10-500	TVA-1803	
C5	5	100	03138367	PRH406	BR84-4-5C	TC40	TD-5-150	TVA-1403	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	.056 200V		P68N-056		CUB4288	4DP-3-563	GEM-4168	4TM-S66	
C7	.03		BPD-03	DD-303	BTM683	CUD-303	B-3-03	5HK-D30	
C8	.001		BPD-001	DD-102	BYA10DL	CUD-102	B-2-10	5HK-D10	
C9	91 5%		1469-000091	TCZ-91	22R5Q91	CM-19B-910J		MS-491	
C10	68 5%		1469-000068	TCZ-68	22R5Q68	CM-19B-680J	CNO-468	MS-468	
C11	5.6 NPO 5%							10TCC-V56	
C12	33 NPO 5%		DTZ-33	C10Q33C	CM-19B-330J	CNO-433		10TCC-Q33	
C13	4.7 NPO 5%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47	
C14	1.5 10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15	
C15	2T NPO 5%			TCZ-2T	C10Q2TC	CCTO-2T0	CNO-4T	10TCC-Q2T	
C16	.047 200V		P38N-047	DD-503	CUB2947	4DP-3-473	GEM-4147	4TM-S47	
C17	.0015		BPD-0015	DD-152	BYA10DL5	CUD-152	B-2-15	5HK-D15	
C18	.0015		BPD-0015	DD-152	BYA10DL5	CUD-152	B-2-15	5HK-D15	
C19	.0015		BPD-0015	DD-152	BYA10DL5	CUD-152	B-2-15	5HK-D15	
C20	.001		BPD-001	DD-102	BYA10DL	CUD-102	B-2-10	5HK-D10	
C21	.0015		BPD-0015	DD-152	BYA10DL5	CUD-152	B-2-15	5HK-D15	
C22	.001		BPD-001	DD-102	BYA10DL	CUD-102	B-2-10	5HK-D10	
C23	470 10%		DI-470	DD-471	SR5T47	CUD-471	GP347	10TS-T47	
C24	.001		BPD-001	DD-102	BYA10DL	CUD-102	B-2-10	5HK-D10	
C25	3.8 NPO s..35mmf				C10V4C			10TCC-V39	
C26	4.7 NPO ±.5mmf		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47	
C27	.015 600V		P468N-015	DD-153	CUB4P15	4DP-1-153	GEM-4115	4TM-S15	
C28	47 NPO 5%			DTZ-47	C10Q47C	CM-19B-470J	CNO-447	10TCC-Y23	
C29	.022 400V		P468N-022	DD-303	CUB4322	4DP-2-223	GEM-4122	4TM-S22	
C30	.1 400V		P468N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10	
C31	.001		BPD-001	DD-102	BYA10DL	CUD-102	B-2-10	5HK-D10	
C32	.047 400V		P468N-047	DD-503	CUB4947	4DP-3-473	GEM-4147	4TM-S47	
C33	.022 400V		P468N-022	DD-303	CUB4322	4DP-2-223	GEM-4122	4TM-S22	
C34	.015 600V		P468N-015	DD-153	CUB4S15	6DP-2-153	GEM-4115	6TM-S15	
C35	.1 400V		P468N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10	
C36	100		DI-100	DD-101	L07I	CUD-101	GP310	10TS-T10	
C37	47 NPO 10%		DI-47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47	
C38	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22	
C39	.01		BPD-01	DD-103	BYA10DL	CUD-103	B-1-10	5HK-S10	
C40	.01		BPD-01	DD-103	BYA10DL	CUD-103	B-1-10	5HK-S10	
C41	470		SI 470	DS-471	BYA07D47	CUD-471	GP347	10TS-T47	
C42	.015 200V		P38N-015	DD-153	CUB4S15	4DP-1-153	GEM-4115	4TM-S15	
C43	.0047		BPD-0047	DD-472	BYA10D47M	CUD-472	B-3-47	5HK-D47	
C44	.001		BPD-001	DD-102	BYA10DL	CUD-102	B-2-10	5HK-D10	
C45	.0047		BPD-0047	DD-472	BYA10D47M	CUD-472	B-3-47	5HK-D47	
C46	.01		BPD-01	DD-103	BYA10DL	CUD-103	B-1-10	5HK-S10	
C47	470		SI 470	DS-471	BYA07D47	CUD-471	B-3-47	10TS-T47	
C48	.01		BPD-01	DD-103	BYA10DL	CUD-103	B-1-10	5HK-S10	
C49	.0022 10%		DI-2200		P68D23	CUD-222	GP-222	10TS-D22	
C50	.001		BPD-001	DD-102	BYA10DL	CUD-102	B-2-10	5HK-D10	
C51	.01		BPD-01	DD-103	BYA10DL	CUD-103	B-1-10	5HK-S10	
C52	.0033 600V		P68N-0033	DE-332	CUB6D33	6DP-1-332	GEM-6233	6TM-D33	
C53	.330		DI-330	DD-331	L07I33	CUD-331	GP-333	10TS-T33	
C54	.047 400V		P468N-047	DD-503	CUB4947	4DP-3-473	GEM-4147	4TM-S47	
C55	.01 400V		P468N-01	DS-103	CUB43B	4DP-1-103	GEM-411	4TM-S10	
C56	.033 600V 10%		VB4CB33-10%		P68D33	6DP-3-333	GEM-6133	6TM-S33	
C57	.01 600V		P68N-01	DE-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10	
C58	.0022 400V	Note 1	P468N-0022	DE-222	CUB4D22	4DP-1-222	GEM-6222	6TM-D22	
C59	.1 600V		P68N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10	
C60	470 10%		DI-470	DD-471	SR5T47	CUD-471	GP347	10TS-T47	
C61	.01 800V		P68N-1	DE-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10	
C62	68 N330 10%					*		10TC8-Q68	
C63	75 N470 10%					*			
C64	.0027 600V 10%		VB4CB3D-10%		DPM38D27	6DP-1-272	GEM-1633	5PS-D27	
C65	33 N330 10%					*		10TC8-Q33	
C66	.01 200V		P38N-01	DS-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10	
C67	.068 300V 10%		VB4CB68-10%		P68D68	4DP-3-683	GEM-4168	4TM-S68	
C68	.0022 400V		P468N-0022	DE-222	CUB4D22	6DP-1-222	GEM-6222	6TM-D22	
C69	.0033 400V 5%		VB4CB33-5%		1R5D3	CM-20B-332J	MCJ453	MS-333	
C70	100 N750 10%	DTN-100	N750-DI 100		C10T1U	CCTN-101	CNT-310	10TCU-T10	
C71	390 5%		1469-00039		22R5T39	CM-19B-391J	MCE343	MS-339	
C72	470		DI-470	DD-471	BYA10DT47	CUD-471	B-347	10TS-T47	
C73	390 5%		1469-00039		22R5T39	CM-19B-391J	MCE343	MS-339	
C74	220 10%		1469-00022	TCZ-220	22R5T22	CM-19B-221J	CNO-322	MS-322	
C75	.0047		BPD-0047	DD-472	BYA10D47M	CUD-472	B-347	5HK-D47	

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C76	.047 400V		P468N-047	DD-503	CUB4947	4DP-3-473	GEM-4147	4TM-S47
C77	.033 1000V 10%		P1084CM-033		DPM38S333	16DP-5-333	GEM-1813	10TM-S33
C78	75 3000V 10%				SVA30Q75	VCM-30-750K	3DY-482	
C79	.047 600V		P68N-047	DD-503	CUB6947	6DP-3-473	GEM-6147	6TM-S47

Note 1. May not be used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DUMONT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	01072161 ①	BPL-74				Volume
	700K Tap							
B	Switch			Not Reg.				Push-Push Off-On
R2A	1.5meg	½	01072152 ②	FI-53		†(2)-1503	◀ UE4170	Bass
B	1meg			R1-52				Treble
R3A	500K	½	01071433	FI-40		†(2)-1102	FB65A	Brightness
B	Shaft			Not Reg.			CH750	
R4A	5000Ω	4(WW)	01026092	WW-503	A10-6000	WP83000	M5MPK	Contrast
B	Shaft			Not Reg.	FS-3	Not Reg.	DS-38	
R5A	2meg	½	01072151	FI-57				Fringe Lock (Sync Stab.)
B	750K			R1-51		†(2)-1504	▲ UE4189	Vert. Hold
R6A	500K	½	01056042	TT-52	B47-500E-S	BII-123	FT45SL	AGC Delay (RF)
B	Shaft			Not Reg.	Not Reg.	TM4	Not Reg.	
R7A	1.75meg	½	01071743	TT-75	B47-2meg-S	BII-136	FT38SL	Dumonitor (AGC)
B	Shaft			Not Reg.	Not Reg.	TM4	Not Reg.	
R8	2000Ω	2(WW)	390666		30-2000	113-2000	FL-3K	Vert. Linearity
R9	7.5meg	½	01071091	TT-90	B47-7.5meg-S	HLC-6	FTA75SL	Vert. Size (Height)
	8.5meg Size			*	*	*	*	
R10A	15K	2(WW)	01070621	WH-153	A43-15K	WII-118	R15ML	Horiz. Size
B	Shaft			Not Reg.	FS3-1/2	8K2	Not Reg.	
R11A	300K	½	01071041	TT-46	B47-300K-S	BII-129	U43	Horiz. Frequency Set
B	Shaft			Not Reg.	Not Reg.	TM4	Not Reg.	

① Chassis 120603A uses Part #390655. Chassis 120604A, 605A uses Part #390614.
② Used in Chassis 120602A, 604A only.
† "CONCENTRIKIT" Equivalent: K-6 Kit with Base Elements and Shafts: (Not available as a factory assembled unit). B17-139, P17-034 (Panel) B13-137, R1-103 (Rear) B8 (Retainer)
† "CONCENTRIKIT" Equivalent: K-2 Kit with Base Elements and Shafts: (Not available as a factory assembled unit). B11-133, P1-034 (Panel).
†† "CONCENTRIKIT" Equivalent: K-6 Kit with Base Elements and Shafts: (Not available as a factory assembled unit). B11-136, P17-034 (Panel) B11-136, R1-103 (Rear) B8 (Retainer)
◀ "STA-LOC" Equivalent: FA155R, RU18A, O8887, 1S1125.
▲ "STA-LOC" Equivalent: FB261, RU784L, O8687, 1S1125.
(2) Use long Resistor in series with right hand terminal, viewed shaft end terminals down.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise specified.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R12	2.2meg			
R13	5600Ω 5W	PW5-5600	5W-SQ-5600	
R14	2700Ω			
R15	470Ω			
R16	47Ω			
R17	22K			
R18	470Ω			
R19	100K			
R20	180			
R21	6800Ω			
R22	100K			
R23	2200Ω			
R24	8200Ω 2W			
R25	180Ω			
R26	3300Ω			
R27	47K			
R28	4700Ω			
R29	15K			
R30	39K			
R31	6.8meg			
R32	27K			
R33	3700Ω			
R34	620Ω 1W			
R35	12K 2W			
R36	27K 1W			
R37	150K			
R38	100K			
R39	1000Ω			
R40	1800Ω 4W	PW4-1500	4G-10K	
R41	8200Ω 2W			
R42	470Ω			
R43	3300Ω			
R44	22K			
R45	10meg			
R46	470K			
R47	470K			
R48	1500Ω 4W	PW4-1500	4W-SQ-1500	
R49	220Ω 1W			
R50	4700Ω 1W			
R51	150K			
R52	120K			
R53	2.7meg			
R54	150K			
R55	270K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R56	2.2meg			
R57	3.3meg			
R58	180K			
R59	330K			
R60	1.8meg			
R61	2.7meg			
R62	150K			
R63	22K			
R64	150K			
R65	470K			
R66	6800Ω			
R67	56K 1W			
R68	47K 1W			
R69	2.2meg			
R70	100K 1W			
R71	47K 1W			
R72	100K			
R73	47Ω			
R74	6800Ω 2W			
R75	330Ω 1W			
R76	2700Ω			
R77	22Ω			
R78	560Ω			
R79	560Ω			
R80	1meg			
R81	1meg			
R82	1800Ω			
R83	22K 1W			
R84	1.2meg			
R85	68K			
R86	6200Ω 1W			
R87	47K			
R88	120K			
R89	1300Ω			
R90	15K			
R91	100Ω			
R92	100Ω			
R93	10K 4W	PW4-10K	4G-10K	
R94	4700Ω			
R95	2Ω			
R96	10K			
R97	220K			
R98	27Ω			

Note 1

Note 1. May not be used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	DUMONT PART No.	REPLACEMENT DATA
K1	Deemphasis Network	680mmf, .0033mfd, .01mfd, 22K, 33K	8800167I	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: DUMONT PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	40.1MC Trap	20141942	TV-152	8236	RTC-8626	T826	
L2	41.25MC Trap	713046	TV-151	8236	RTC-8626	T826	
L3	47.25MC Trap	20161823	TV-153	8235	RTC-8556	T825	
L4	1st Video IF	20141972	TV-131	8230	RTC-8624	T823	
L5	47.25MC Trap	20144933	TV-153	8235	RTC-8556	T825	
L6	Fil. Choke (1.5uh)	20141782	BC-583	4804	RTC-8516	T856	
L7	2nd Video IF	20008995	TV-130	8233	RTC-8551	T827	
L8	3rd Video IF	20008995	TV-130	8233	RTC-8551	T827	
L9	Fil. Choke (1.5uh)	20141782	BC-583	4804	RTC-8516	T856	
L10	4th Video IF	20013861					
L11	RF Choke (1uh)	20134585	BC-581	4803	RTC-8515	T855	
L12	Peaking (300uh)	20144323	TV-184	6154	RTC-8546	T813	
L13	Peaking (105uh)	20144351	TV-194	6113	RTC-8574	T305	
L14	RF Choke (5.6uh)	20006370	SW-631	4809	RTC-8519	T830	
L15	4.5MC Trap	20137585	TV-181	1469	RTC-8602	T260	
L16	Peaking (105uh)	20144351	TV-194	6113	RTC-8574	T305	
L17	Sound IF	20137793	TV-119	1469	RTC-8603	T349	
L18	Ratio Detector	20000943	TV-115	6171	RTC-8620	T347	
L19	RF Choke (5.3uh)	20006550	BC-586	4811	RTC-8521	T822	
L20	RF Choke (5.3uh)	20006550	BC-586	4811	RTC-8521	T822	
L21	RF Choke (4.7uh)	20006330	SW-631	4809	RTC-8519	T819	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: DUMONT PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L22	Horiz. Stabilizer (Horiz. Hold)	2106167I	TV-163	6210	RTC-8622	HS-5	WLC-25	T103	

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	RATINGS: DC RES.	RATINGS: INDUCTANCE @ CURRENT 1000 ~/	REPLACEMENT DATA: DUMONT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L23	.280A	35Ω	1.4 Hy.	737046	C-2996	C-2343①	26C93	C-17X	① Drill new mounting hole(s).

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: DUMONT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ⓐ 1.8A	330VCT ⓐ .280A DC	5V ⓐ 3A	730099					
	SEC. 3	SEC. 4	SEC. 5						
	24V Tap ⓐ 6.3V ⓐ 8.5A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: DUMONT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	738176	A-3233	VO-113	26S72	A-108X	
T3	Yoke (Horiz.18.6Mf) (90°) (Vert. 41Mf)	708362	MDF-92 ①	DY-15A ①	Y-16 ①	Y-41-3	
	Rear Cover and Centering Device					YC-112	
T4	Horiz. Output	738175					

① Use original horizontal damping network if necessary.
Use original rear cover and centering device.
Cut and form a piece of .010 gauge fish paper inside yoke itself and support with acetate cement to provide an insulation between the width sleeve and the yoke proper.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: DUMONT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	5500Ω	3-4Ω	734186	A-2930	A-3877	24S51	S-3X	

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP	REPLACEMENT DATA: DUMONT PART No.	QUAM PART No.	NOTES
SP1	6" Electrostatic	PM	3-4Ω	18003708 ① 89015853 ②	6A15	① Used in Chassis 120602A, 120604A. ② May be used in some versions of Ch. 120602A, 120604A.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: DUMONT PART No. FUSE	DUMONT PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3/10 125V	11007180		315.300 (3AG 3/10A 125V 3/8 P/T)		MDV 3/10	
M2	N	7/10A 125V	808233		333.700 (N 7/10A 125V)	346010	N 7/10	HN 1/2 to 3/4
M3	1½" length #26 wire							

DUMONT CHASSIS 120482B, 523B, 543B, 563B, 568B, 602A, 603A, 604A, 605A

FOLDER 1

TV PARTS LIST AND DESCRIPTIONS (Continued)

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		DUMONT PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M4	1N295 or CK706A	26001891		1N295 1N295		Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	DUMONT PART No.	NOTES
M5	Tuner	471267	VHF, Chassis 120602A, 603A STANDARD COIL REPLACEMENT #GG-4220A *
	Tuner	471280	VHF, Chassis 120604A, 605A
	Tuner	89014455	UHF
M6	Switch	510085	TV-Phono (DPDT Slide Type)

* Use shafts and front mounting studs from original tuner.

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODEL NO.	RA700, A, B, C-B50	RA700, A, B, C-B51	RA700, A, B, C-B52	RA700, A, B, C-B53	RA700, A, B, C-B54	RA700, A, B, C-B55	RA700, A, B, C-B56	RA700, A, B, C-B57	RA700, A, B, C-B58	RA700, A, B, C-B59	RA700, A, B, C-B60	RA700, A, B, C-B61	RA700, A, B, C-B62	RA700, A, B, C-B63	RA700, A, B, C-B64	RA700, A, B, C-B65	RA700, A, B, C-B66	RA700, A, B, C-B67	RA700, A, B, C-B68	RA700, A, B, C-B69	RA704, A, B, C-B70	RA704, A, B, C-B71	RA704, A, B, C-B72	RA704, A, B, C-B73	RA704, A, B, C-B74	RA704, A, B, C-B75	RA704, A, B, C-B76	RA704, A, B, C-B77
Dial Glass-Radio	520305																						X	X	X	X	X	X		
Dial Glass-Radio	520287																												X	X
Mask-Gold	461393		X	X			X	X	X	X	X	X	X	X	X	X			X	X	X	X			X	X	X	X	X	X
Mask-Silver	461393A		X	X	X	X											X	X					X	X						
Knob- VHF Channel Selector Gold	400056			X				X		X		X		X		X				X		X				X		X	X	X
Knob- "	400062		X				X		X		X		X		X				X		X				X		X			
Knob- VHF Channel Selector Silver	400056A			X		X												X						X						
Knob- "	400062A		X		X												X						X							
Knob- Gold "Perma-Tune" Fine Tuning	400060		X	X			X	X	X	X	X	X	X	X	X	X			X	X	X	X			X	X	X	X	X	X
Knob- Silver "Perma-Tune" Fine Tuning	400060A		X	X	X	X											X	X					X	X						
Knob- Bass, Brightness, Fringe Lock	45009321		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knob- Treble, Contrast, Vertical Hold	461090A		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knob-Horizontal Hold	45009341		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knob-AM FM Tuning((Radio)	461302																						X	X						
Knob- "	461408																								X	X	X	X		
Knob- "	461211																												X	X
Knob- Loudness, Bass, Treble, Balance, Function-Preamp	461413																						X	X						
Knob- "	461409																								X	X	X	X		
Knob- "	461210																												X	X
Pushbutton- On-Off, Volume Gold	400061		X	X			X	X	X	X	X	X	X	X	X	X			X	X	X	X			X	X	X	X	X	X
Pushbutton- On-Off, Volume Silver	400061A		X	X	X	X											X	X					X	X						
Knob- UHF Channel Selector Gold	400063																													
Knob- UHF Channel Selector Silver	400063A																													

VHF TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A213, A214, A215 ..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
		207MC	205.25MC 209.75MC	12		A202	
		201MC	199.25MC 203.75MC	11		A203	
		195MC	193.25MC 197.75MC	10		A204	
		189MC	187.25MC 191.75MC	9		A205	
		183MC	181.25MC 185.75MC	8		A206	
		177MC	175.25MC 179.75MC	7		A207	
		85MC	83.25MC 87.75MC	6		A208	
		79MC	77.25MC 81 75MC	5		A209	
		69MC	67.25MC 71.75MC	4		A210	
		63MC	61.25MC 65.75MC	3		A211	
		57MC	55.25MC 59.75MC	2		A212	

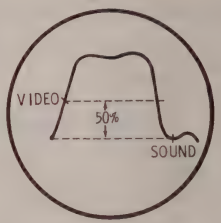


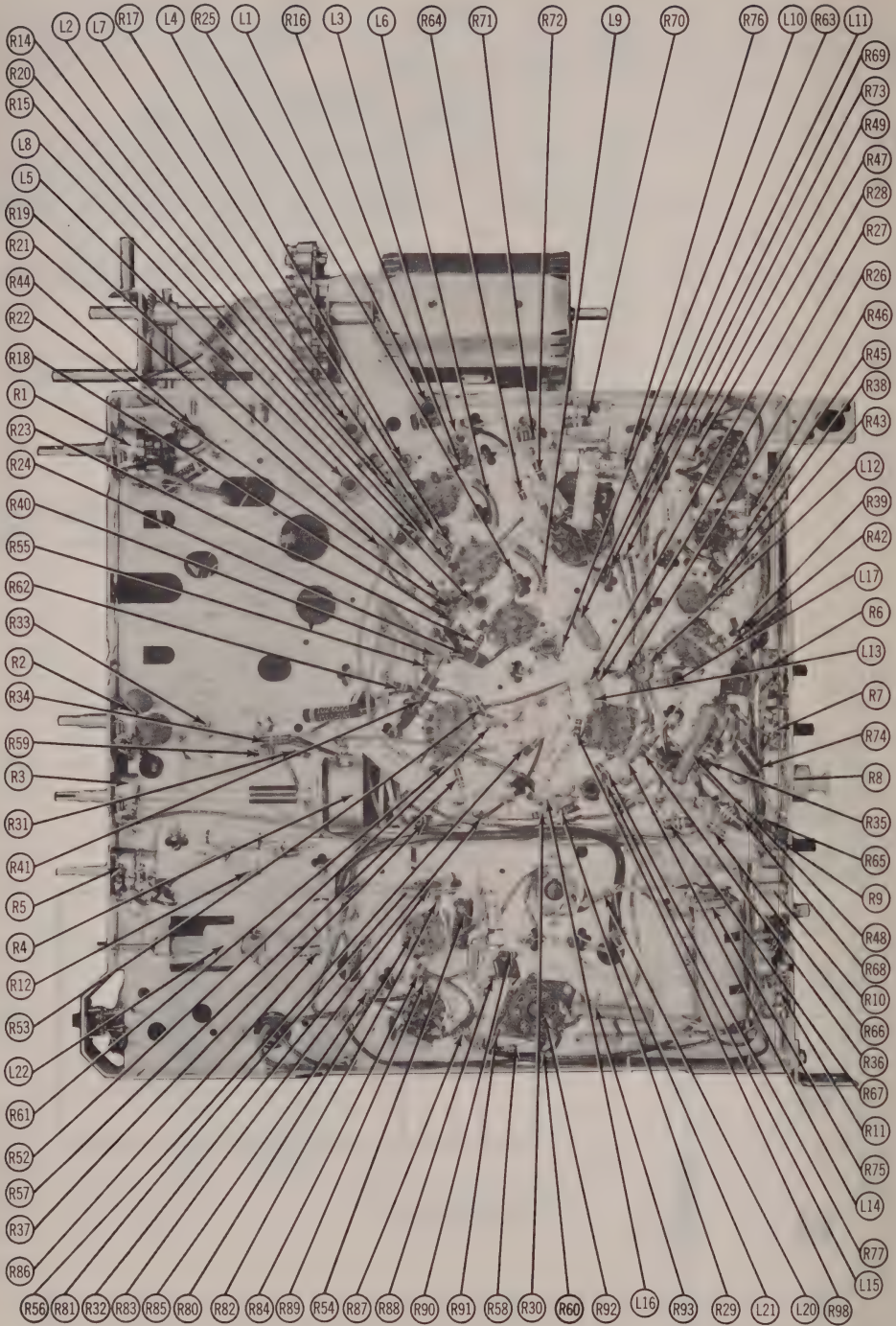
FIG. 201

RF AND MIXER ALIGNMENT

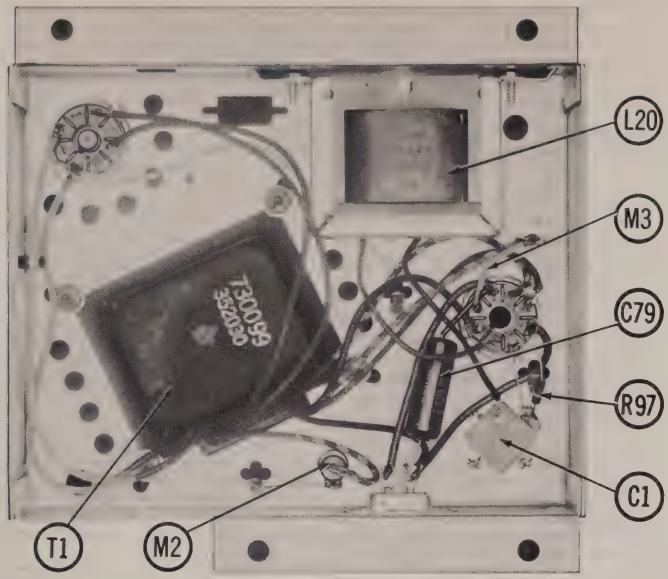
Connect the negative lead of a variable bias supply to point ⏚. Positive to chassis. Set bias for 2.5 volts.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point ⏚. Common to chassis.	A213, A214, A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope.
3.	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns.
		207MC	205.25MC 209.75MC	12		A217	
		201MC	199.25MC 203.75MC	11		A218	
		195MC	193.25MC 197.75MC	10		A219	
		189MC	187.25MC 191.75MC	9		A220	
		183MC	181.25MC 185.75MC	8		A221	
		177MC	175.25MC 179.75MC	7		A222	
		85MC	83.25MC 87.75MC	6		A223	
		79MC	77.25MC 81.75MC	5		A224	
		69MC	67.25MC 71.75MC	4		A225	
		63MC	61.25MC 65.75MC	3		A226	
		57MC	55.25MC 59.75MC	2		A227	

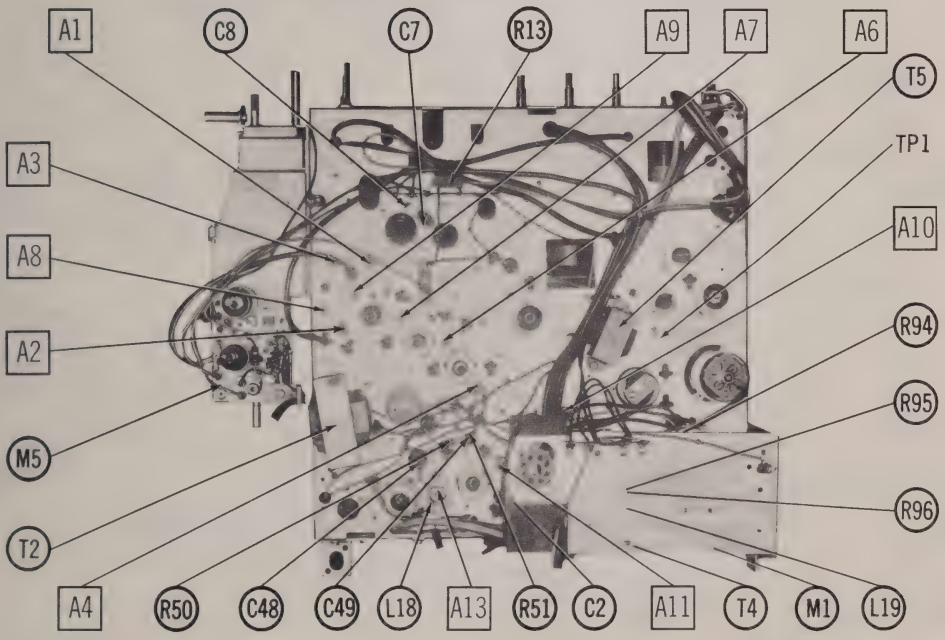
FIG. 202



TV CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.



TV POWER CHASSIS - BOTTOM VIEW

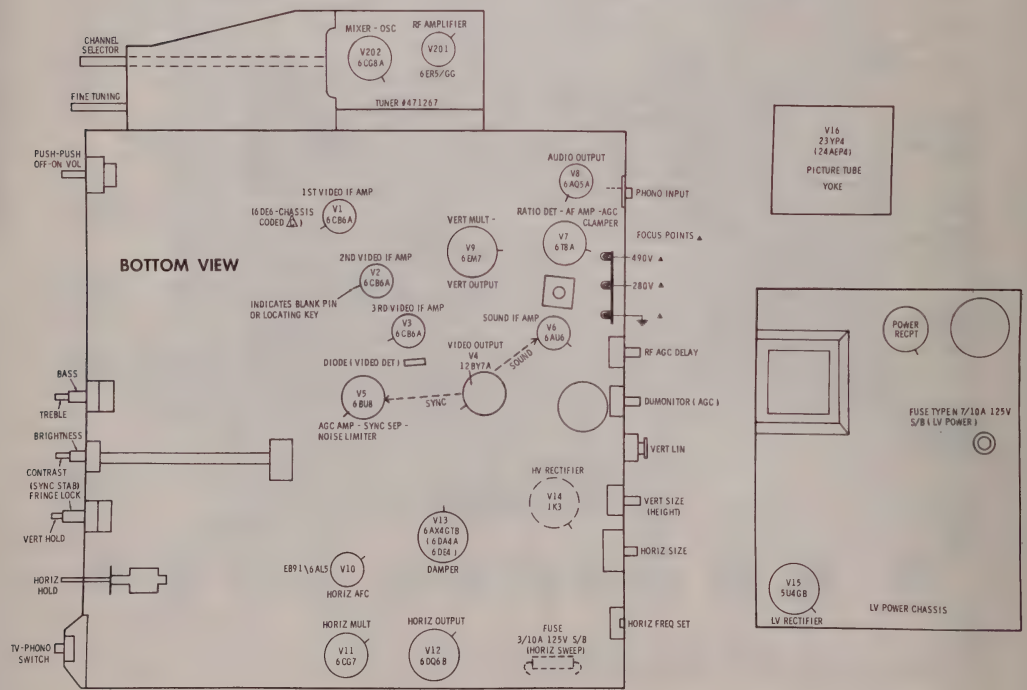


TV CHASSIS - TOP VIEW

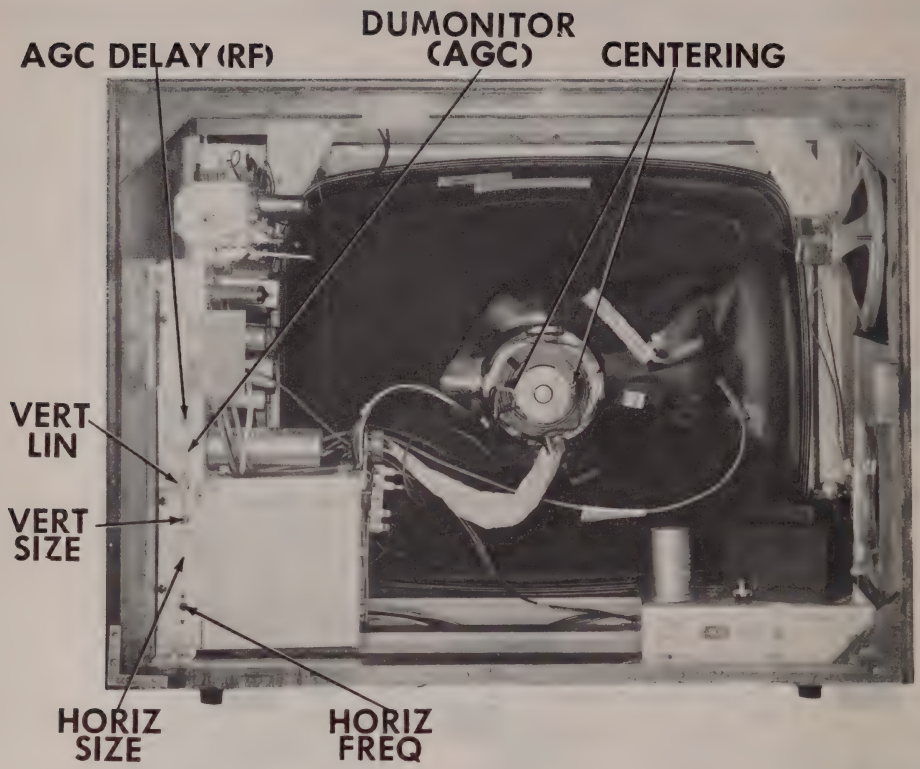
TV RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6A	3.6meg	47Ω	FIL	FIL	▪490Ω	▪490Ω	0Ω		
V2	6CB6A	60K	66K	FIL	FIL	†505Ω	†505Ω	66K		
V3	6CB6A	2200Ω	180Ω	FIL	FIL	†8200Ω	†8200Ω	0Ω		
V4	12BY7A	27Ω	3300Ω	NC	FIL	FIL	NC	†5600Ω	†12K	0Ω
V5	6BU8	0Ω	†18K	†120K	FIL	FIL	2.7meg	•2.4meg	•†2.5meg	•4meg
V6	6AU6	1.5Ω	0Ω	FIL	FIL	†11K	†11K	470Ω		
V7	6T8A	INF	33K	INF	FIL	FIL	3.6meg	0Ω	10meg	†470K
V8	6AQ5A	470K	220Ω	FIL	FIL	†1900Ω	†1500Ω	NC		
V9	6EM7	2.2meg	†675Ω	• 1800Ω	• 480K	• †1.8meg	0Ω	FIL	FIL	
V10	EB91 6AL5	1meg	2meg	FIL	FIL	1meg	0Ω	1800Ω		
V11	6CG7	†120K	• 100K	1300Ω	FIL	FIL	†8200Ω	3.2meg	1300Ω	0Ω
V12	6DQ6B	TP	FIL	TP	• †21K	3.8meg	TP	FIL	0Ω	TOP CAP †18Ω
V13	6AX4GTB	NC	NC	150K.	NC	†35Ω	NC	FIL	FIL	
V14	1K3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †510Ω
V15	5U4GB	NC	¶	NC	25Ω	NC	23Ω	NC	¶	
V16	23YP4	FIL	22K	Pin 6 †35Ω	Pin 10 †54K	Pin 11 • 280K	Pin 12 FIL			
V201	6ER5/GG	0Ω	5.2meg	FIL	FIL	†6600Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	†15K	0Ω	FIL	FIL	†6600Ω	†27K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 8 OF V15. ▪ MEASURED FROM PIN 2 OF V2.
† MEASURED FROM PIN 3 OF V13. NC NO CONNECTION TP TIE POINT



TV TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and allow it to warm up for 2 minutes. Tune in a TV station, preferably with a test pattern.

Connect a clip lead from TP1 to chassis. Adjust the Horizontal Hold to the center of its range.

Adjust the Horizontal Frequency Set control until the picture is in frequency. Remove clip lead from TP1 and chassis.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 10 wood screws holding rear cover.
2. Remove rear cover.
3. Remove 7 push-on type knobs at front.
4. Disconnect antenna leads, picture tube socket, yoke plug, high voltage lead, and speaker leads.
5. Remove plug from low voltage power chassis.
6. Remove 2 main chassis bolts.
7. Remove main chassis.
8. Remove 2 bolts holding low voltage power chassis.
9. Remove power chassis.

PICTURE TUBE REMOVAL

1. Remove 2 screws at bottom front holding front mask.
2. Remove front mask.
3. Remove rear cover.
4. Disconnect high voltage lead, yoke plug, and picture tube socket.
5. Remove 4 screws (now visible after removing front mask).
6. Remove picture tube out front.

PHOTOFACT® Folder with CIRCUITRACE®

PACKARD-BELL CHASSIS
88-8, 88-9

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

PACKARD-BELL CHASSIS
88-8, 88-9

PACKARD-BELL CHASSIS
88-8, 88-9

MODEL 19T3

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 545 FOLDER 2

PHOTOFACT® Folder with CIRCUITRACE®

PACKARD-BELL CHASSIS 88-8, 88-9

PACKARD-BELL CHASSIS 88-8, 88-9

MODEL 19T3

TRADE NAME	PACKARD-BELL	MODELS	TV Chassis	Remote Control	VHF TUNER
		19T1, 21C5, 21C6, 23C5,			10677 or
		23C6, 23C7, 24T2A	88-8		10672 (with UHF Provisions)
		19T3, 19T3TC,			10686A or
		23C8, 23T3	88-9 ...	WRR-3, WRT-3 ...	10653B (with UHF Provisions)
MANUFACTURER	Packard-Bell Electronics Corp., Service Div., 1920 So. Figueroa St., Los Angeles 7, California				
TYPE SET	Television Receiver (Models with TV Ch. 88-9 use Remote Control Receiver WRR-3, Transmitter WRT-3)				
TUBES	TV: VHF - Seventeen Remote Control Receiver: Five				
POWER SUPPLY	110-120 Volts AC, 60 Cycle				
RATING	TV & Remote Control Receiver: 220 Watts, 2 Amp. @ 117 Volts AC (240 Watts, 2.3 Amp. while Tuning) TV Only: 200 Watts, 1.8 Amp. @ 117 Volts AC				
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)				

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Press glass back firmly - bottom center. Insert business card between glass and trim strip - left of center. Slide card to right to depress spring. Remove safety glass and trim strip.

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up VHF Oscillator, remove channel selector knob.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus Control. (See "Tube Placement Chart" for location.)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Width Coil Slug. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive Control. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (A10) located at bottom of chassis.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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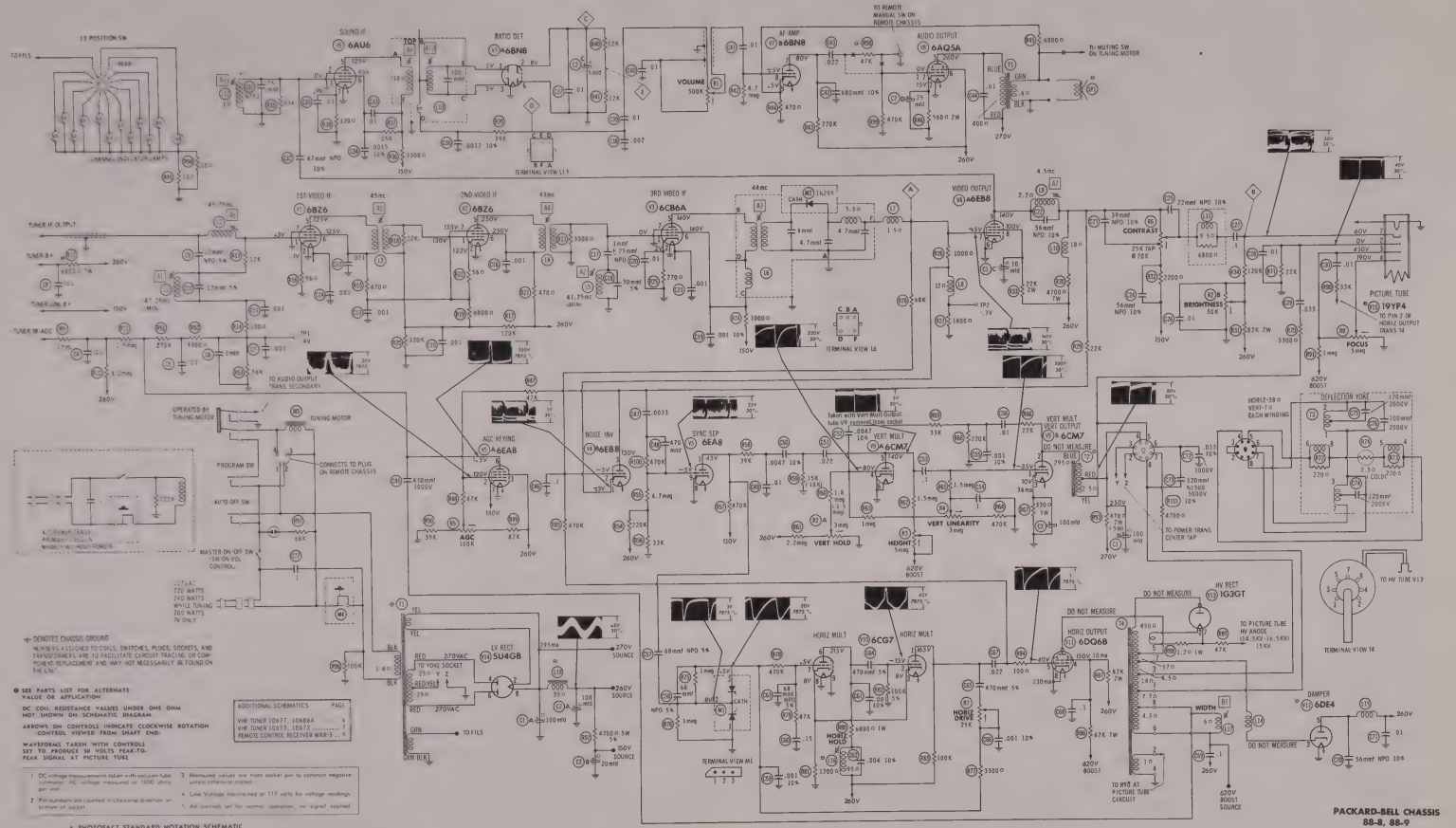
KA896

DATE 9-61 SET 545 FOLDER 2

SET 545 FOLDER 2


13 POSITION SW
SOUND IF
6AU6
RATIO DET
6AB8N
TO REMOTE MANUAL SW ON REMOTE CHASSIS
AF AMP
6BBN8
AUDIO OUTPUT
6AQ5A
VOLUME 500K
1ST VIDEO IF
6BZ6
2ND VIDEO IF
6BZ6
3RD VIDEO IF
6CB6A
VIDEO OUTPUT
6AB8
CONTRAST 25K
BRIGHTNESS 50K
PICTURE TUBE
19YP4
FOCUS
TUNER IF OUTPUT
TUNER B+
TUNER AGC
TUNER ON B+
TO AUDIO OUTPUT TRANS SECONDARY
OPERATED BY TUNING MOTOR
TUNING MOTOR
CONNECTS TO PLUG ON REMOTE CHASSIS
PROGRAM SW
AUTO OFF SW
MASTER ON-OFF SW (SW ON VOL CONTROL)
AGC HYFING
6AE8A
NOISE INV
6AB8
SYNC SEP
6EA8
VERT MULT
6AC7M
VERT OUTPUT
6CM7
VERT HOLD
HEIGHT
VERT LINEARITY
DEFLECTION YOKE
HORIZ-180 VERT-70 EACH WINDING
TO POWER TRANS CENTER TAP
TO HV TUBE V13
TERMINAL VIEW T4
HV RECT
1G3GT
TO PICTURE TUBE HV ANODE (24.5KV to 26.5KV)
DO NOT MEASURE
HORIZ MULT
6CG7
HORIZ OUTPUT
6DQ6B
HORIZ DRIVE
WIDTH
DAMPER
6DE4
TO R93 AT PICTURE TUBE CIRCUIT
620V BOOST SOURCE
LV RECT
5U4GB
270V SOURCE
260V SOURCE
150V SOURCE
TO FILS
TERMINAL VIEW M1
TERMINAL VIEW L6
TERMINAL VIEW L13
CHANNEL INDICATOR LAMPS
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE CHASSIS
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
ADDITIONAL SCHEMATICS PAGE
VHF TUNER 10677, 10680A 6
VHF TUNER 10613, 10672 7
REMOTE CONTROL RECEIVER WRR-3 9
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured on 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket.
3 Measured values are from socket pin to common negative unless otherwise stated.
4 Line Voltage maintained at 117 volts for voltage readings.
5 All controls set for normal operation, no signal applied.
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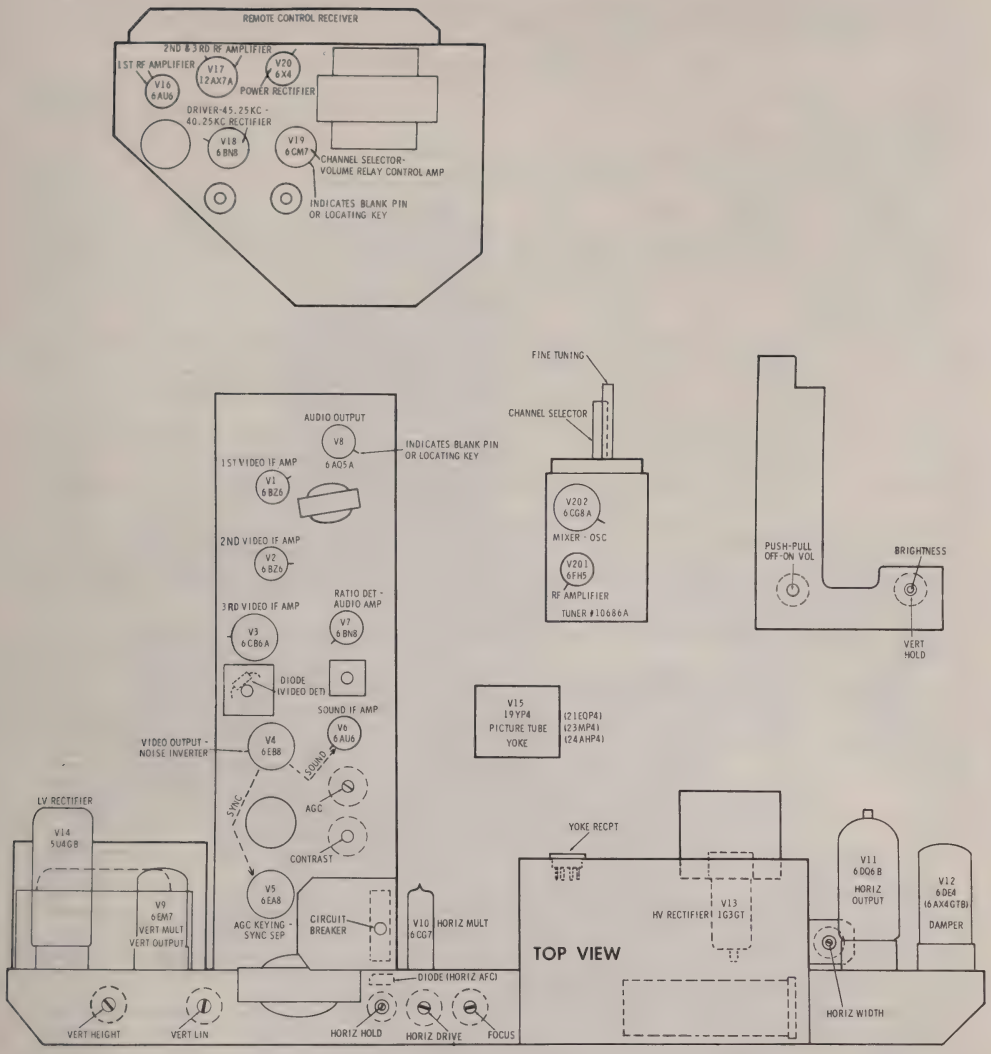
PACKARD-BELL CHASSIS
88-8, 88-9

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, V14

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V15
No vertical deflection V9
Poor vert. linearity or foldover V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, V14
Vert. off freq. V9
Horiz. off freq. Diode (Horiz. AFC), V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V6, V7, V8
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5
No vert. or horiz. sync V5

TV ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A6 ..... GENERAL CEMENT #8721, 8722
WALSCO #2519
A7 thru A10 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Remove V4 and V5 from their sockets.
Connect the negative lead of a 6 volt bias supply to point TP-1. Positive to chassis.
Use only enough sweep generator output to provide a usable pattern on scope.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Place a thin insulated metal strip between the Mixer-Osc. tube and tube shield. Connect the high side of Sig. generator to the metal strip. Low side to chassis.	47.25MC (Unmod.)	Any non-interfering channel	DC probe thru 10K to point (A). Common to chassis. (Across Video Det. Load).	A1	Adjust for MINIMUM deflection.
2.	"	41.25MC	"	"	A2	"
3.	"	44.0MC	"	"	A3	Adjust for maximum deflection.
4.	"	43.0MC	"	"	A4	"
5.	"	45.0MC	"	"	A5	"
6.	"	45.75MC	"	"	A6	"
7.	"	43.0MC	"	"	Mixer Plate Coil	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Connect bias as under "Video IF Alignment".
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect the high side of a separate signal generator to the ground lead of the IF Input Cable to provide markers. DO NOT connect low side of generator to anything.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Across antenna terminals with 120Ω in each lead.	63MC (10MC Swp.)	41.25MC 42.5MC 45.0MC 45.75MC 47.25MC	3	Vert. Amp. thru 22K to point (A). Common to chassis. (Across Video Det. Load).		Adjust sweep generator output to provide not more than 5 volts peak to peak on scope. Check for response similar to Fig. 1 with markers as shown. If necessary, retouch Mixer Plate Coil to position 42.5MC marker at 50% to 60%, A3 to flatten or control tilt and A5 to position 45.0MC marker at corner of response. Replace V4 and V5 in the correct sockets.

4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	High side thru .001mfd to point (A). Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	RF probe to point (B). Common to chassis.	A7	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	High side thru .001mfd to point (A). Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	DC probe to point (C). Common to chassis.	A8, A9	Adjust for maximum deflection.
11.	"	"	"	DC probe to point (D). Common to point (E).	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

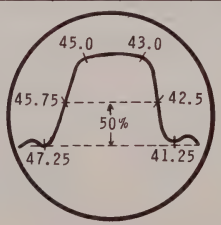
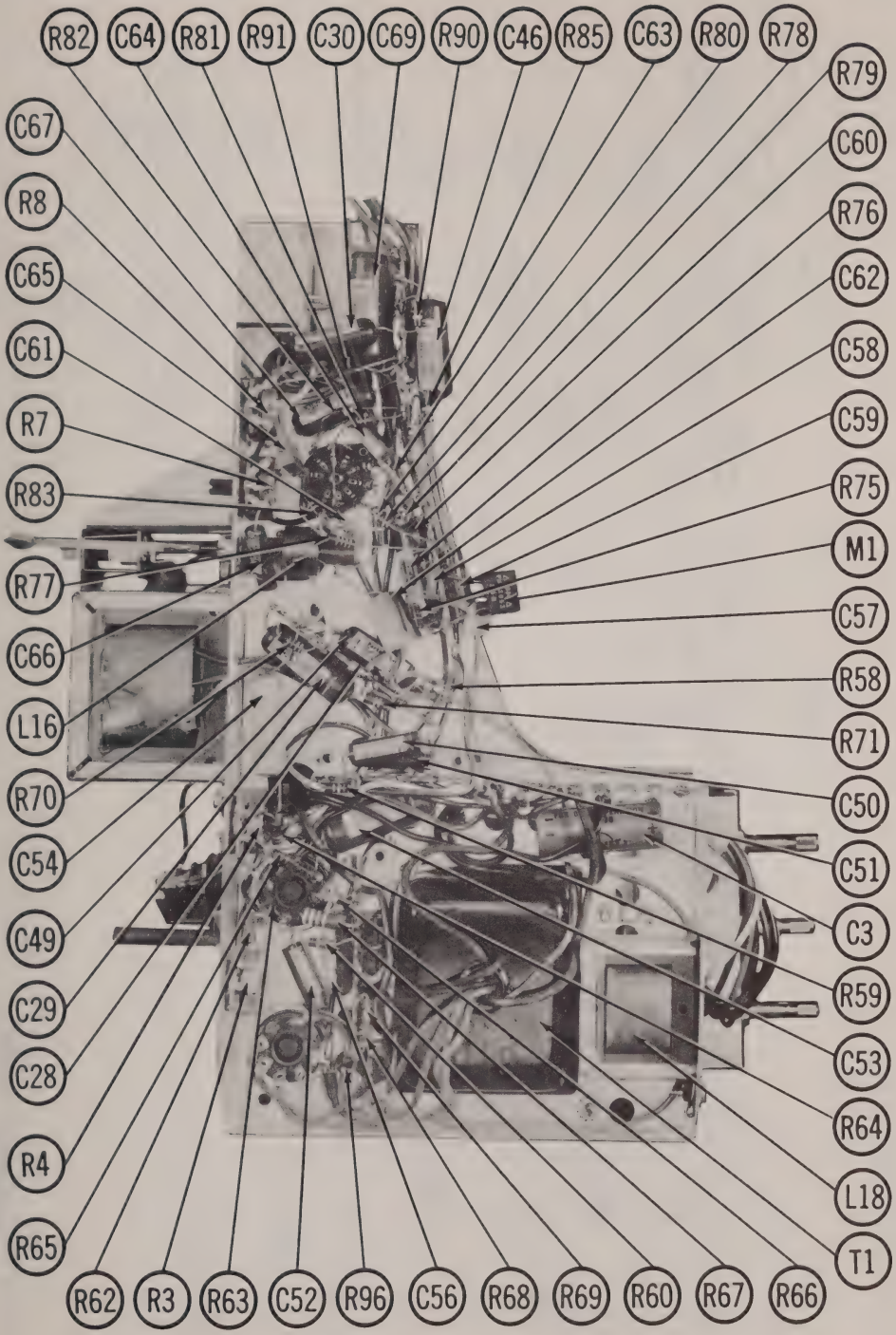
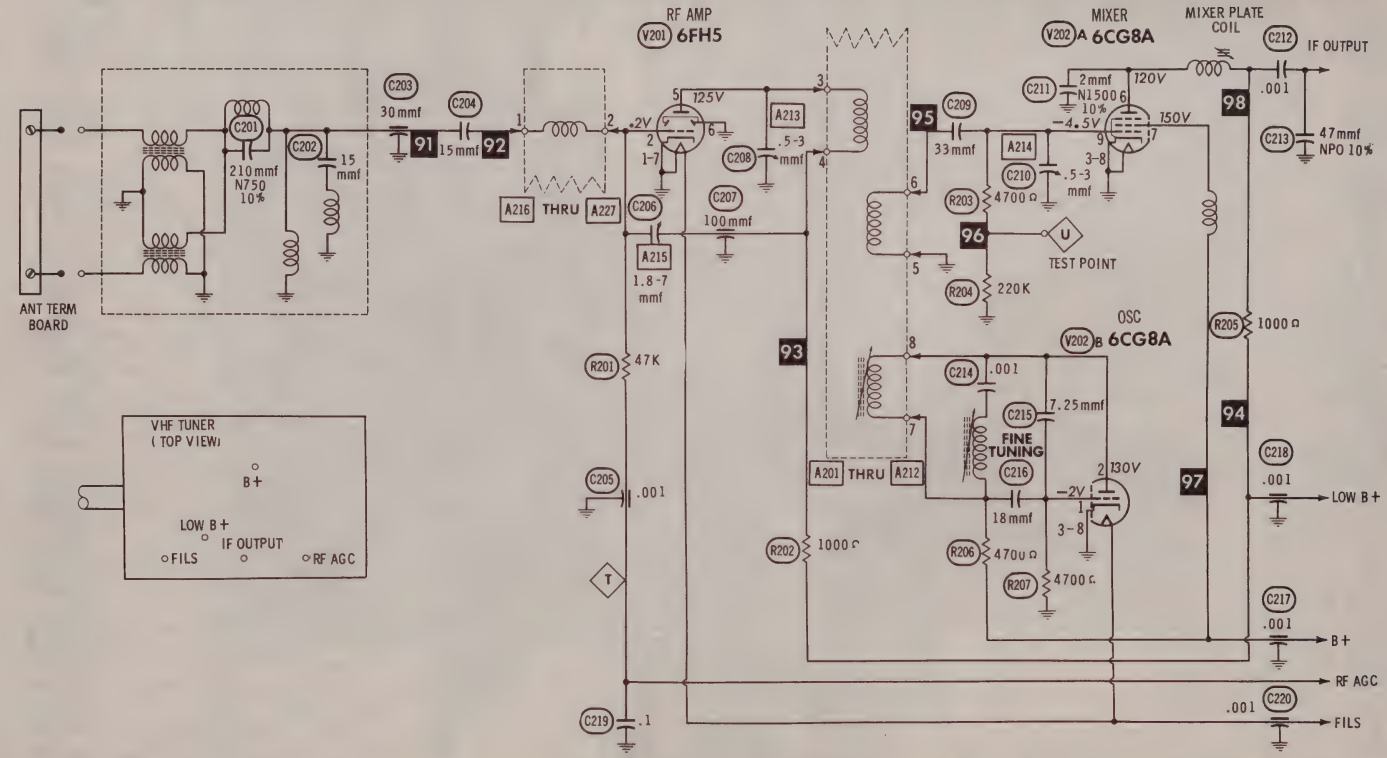


FIG. 1



TV POWER & SWEEP CHASSIS - BOTTOM VIEW



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with CIRCUITRACE

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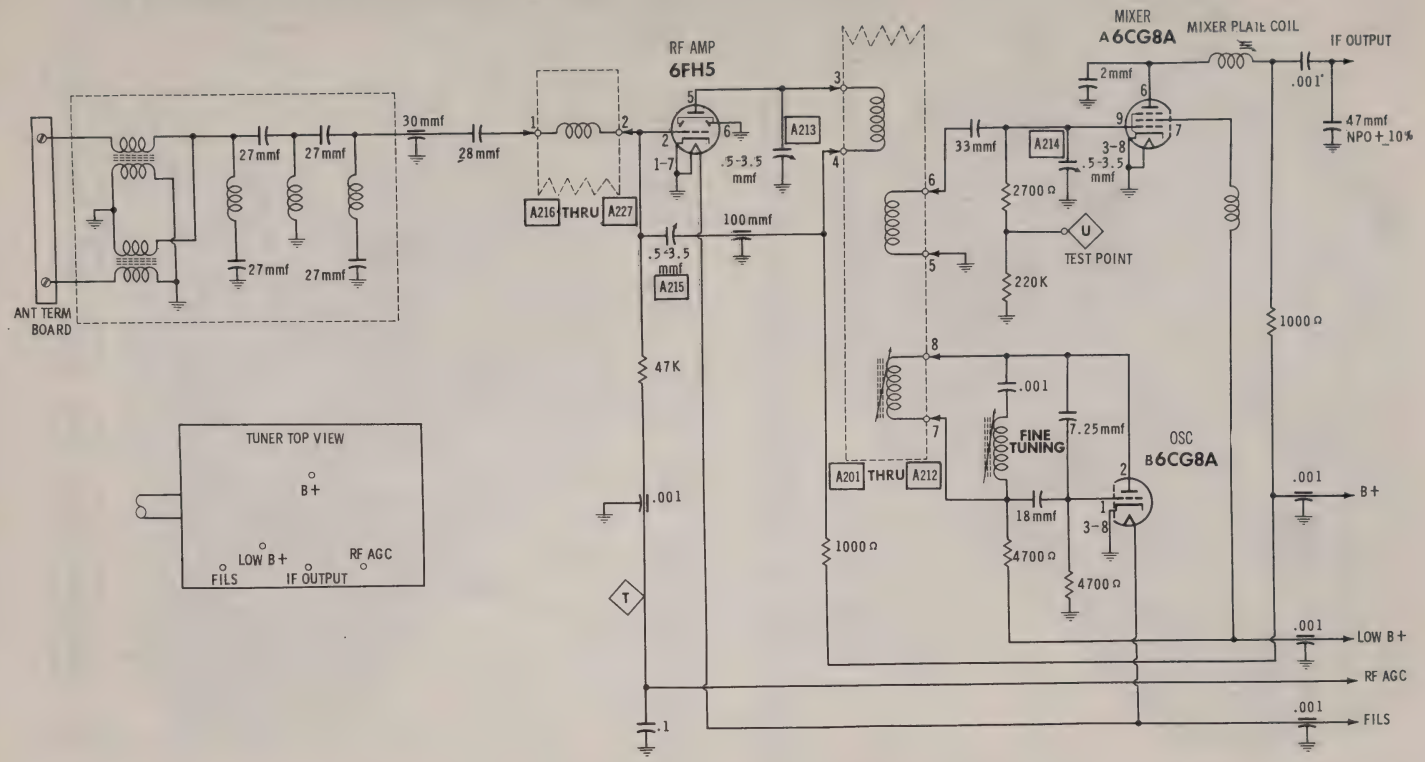
VHF TUNER 10677, 10686A



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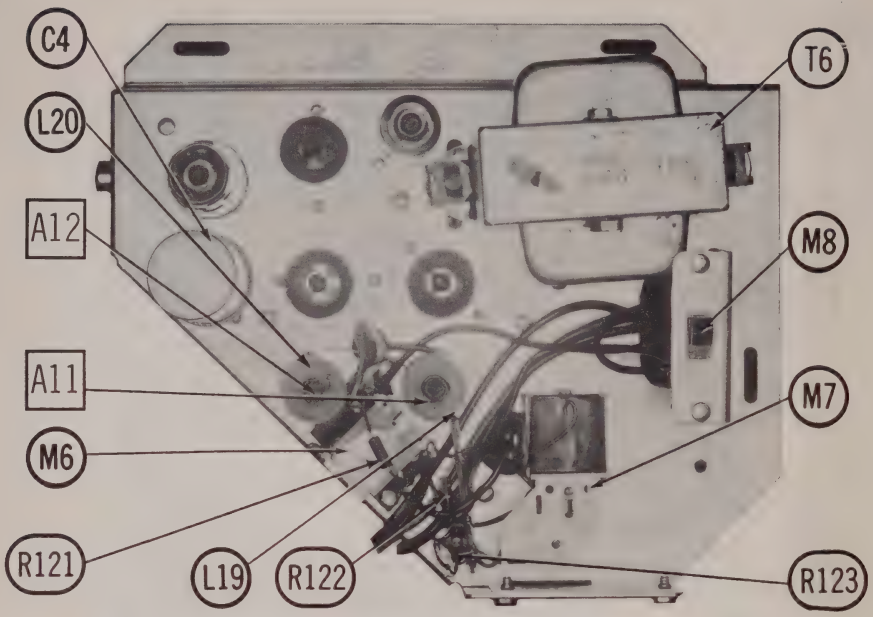
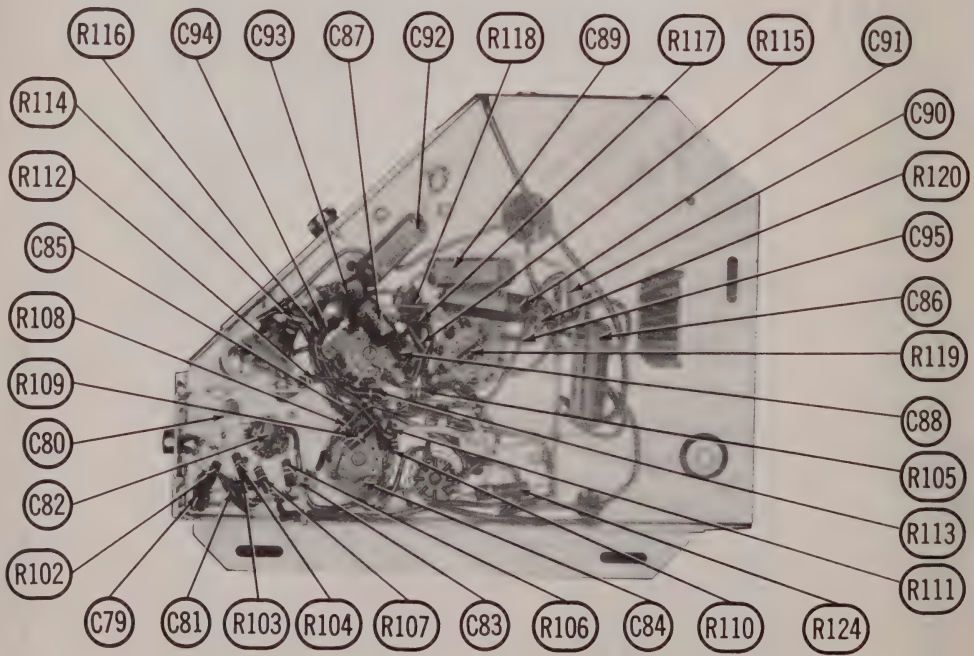
VHF TUNER 10653, 10672

PACKARD-BELL CHASSIS
88-8, 88-9

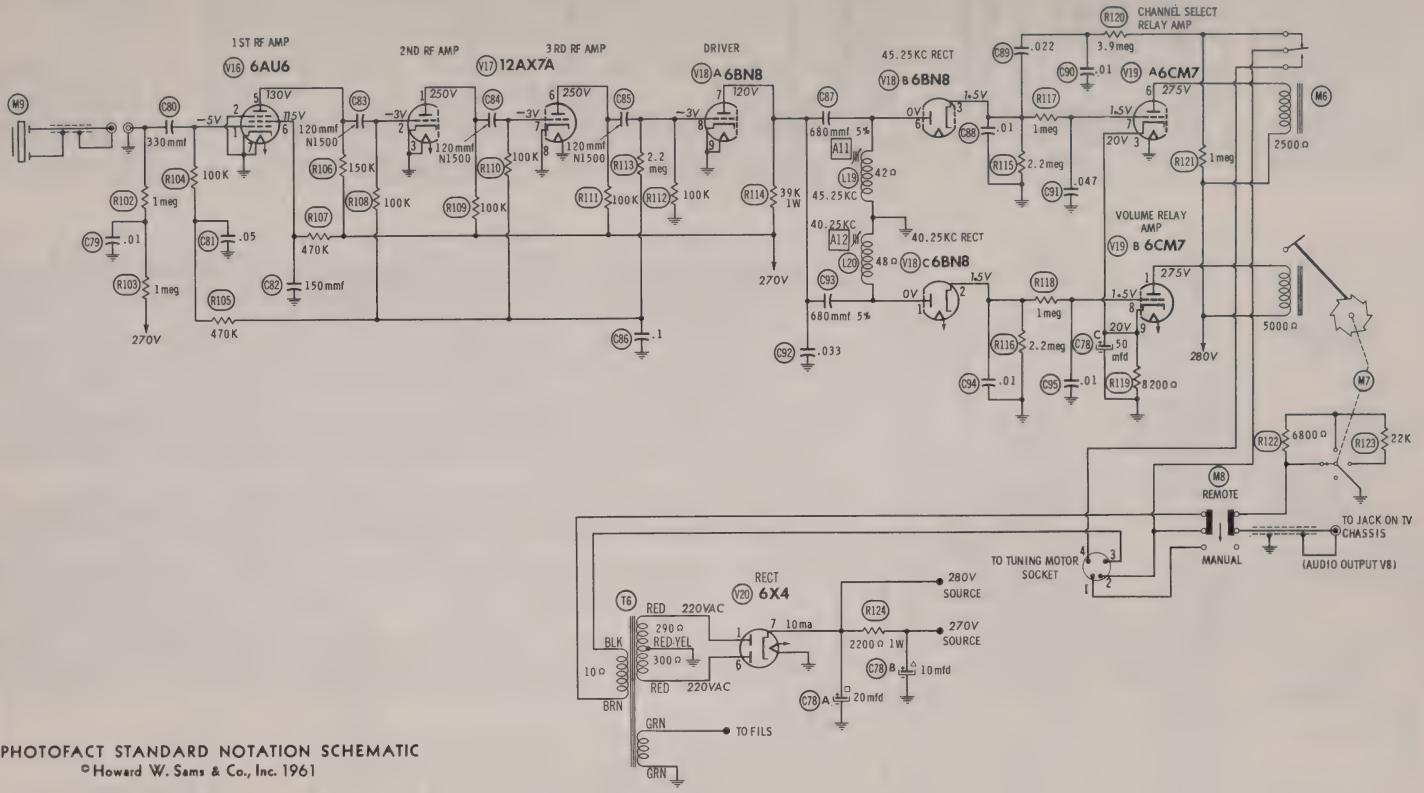
FOLDER 2



REMOTE CONTROL RECEIVER WRR-3 - TOP VIEW



REMOTE CONTROL RECEIVER WRR-3 - BOTTOM VIEW



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ALIGNMENT INSTRUCTIONS

Connect DC probe of VTVM to pin 3 (cathode) of V18. Common to chassis. Rotate the Channel Selector Wheel on the transmitter as fast as is convenient. (The signal from the vibrating rods will be in pulse form, and a fairly rapid repetition rate will be necessary to obtain a VTVM reading suitable for alignment purposes.) Adjust A11 for maximum deflection.
Connect DC probe of VTVM to pin 2 (cathode) of V18. Rotate Volume Wheel and adjust A12 for maximum deflection. Disconnect VTVM.

REMOTE CONTROL RECEIVER WRR-3

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC — USE	GENERAL ELECTRIC — TYPE	ITEM No.	RAYTHEON — USE	RAYTHEON — TYPE	ITEM No.	SYLVANIA — USE	SYLVANIA — TYPE
V1	1st. Video IF Amp.	6BZ8	V8	Audio Output	6AQ5A	V12	Horiz. Output	6DQ6B
V2	2nd Video IF Amp.	6BZ8	V9	Vert. Mult. - Vert. Output	6EM7	V13	Damper	6U4 (5AX4GTB) *
V3	3rd Video IF Amp.	6CM8A	V10	Horiz. Mult.	6CG7	V14	HV Rectifier	1G3GT
V4	Video Output - Noise Inv.	6EH8	V11	Horiz. Output	6DQ6B	V15	LV Rectifier	5U4GB
V5	AGC Keying - Sync Sep.	6EA8						
V6	Sound IF Amp.	6AU8						
V7	Ratio Det. - AF Amp.	6BM8						

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: Packard-Bell PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V15	19TP4 21EQP4 23MP4 24AHP4	24AHP4 ①	19TP4 ① 21EQP4 ① 23MP4 ③ 24AHP4 ①	24AHP4	19YP4 ③ 23MP4 ③ 24AHP4 ③	① Aluminized ③ Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: Packard-Bell PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	≥100	350	24088	AFH3-39-85	C0338	FP332.4	TMT-3447	TVL-3889.3	
B	≥100	350							
C	≥10	350							
C2A	≥100	350	24304	AFH4-53-90	D0473.3	FP430.405 TC26	TMQ-4448	TVL8-4607.5 *	
B	≥30	380							
C	≥5	50							
C3	35	25							
C3	100	25	24306	PRH1370	BRH100-25	TC2501	TD-100-25	TVA-1307	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.01		BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C5	.01		BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C6	1mfd 100V		P388N-1.0		CUB2W1	IDP-5-105	GEM-21	2TM-M1
C7	.001		BPD-001	DD-103	BYA10DI	CCD-103	B-210	5HK-D10
C8	.01		BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C9	12 NPO 5%			TCS-12	CHQ12C	CCTO-120	CNO-412	10TCC-Q12
C10	12 5%		1469-00001	TCS-12	ZER5Q12	CM-19H-120J	CNO-412	MS-412
C11	.001		BPD-001	DD-102	BYA10DI	CCD-103	B-210	5HE-D10
C12	.001		BPD-001	DD-102	BYA10DI	CCD-103	B-210	5HE-D10
C13	.001		BPD-001	DD-103	BYA10DI	CCD-103	B-210	5HE-D10
C14	.001		BPD-001	DD-103	BYA10DI	CCD-103	B-210	5HK-D10
C15	.001		BPD-001	DD-103	BYA10DI	CCD-103	B-210	5HK-D10
C16	.001		BPD-001	DD-103	BYA10DI	CCD-103	B-210	5HK-D10
C17	1 NPO ±.25mmf		NPO-DI 1.0	TCZ-1			CNO-610	10TCC-V10
C18	39 5%		1469-00003	TCZ-30	ZER5Q30	CM-19H-300J		MS-430
C19	.001		DI-1000	DD-103	SR5DI	CCD-103	GP210	10TE-D10
C20	.01		BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C21	.001		BPD-001	DD-103	BYA10DI	CCD-103	B-210	5HK-D10
C23	56 NPO 10%			TCZ-56	CHQ56C	CCTO-560	CNO-456	10TCC-Q56
C23	39 NPO 10%		NPO-DI 39	TCZ-39	CHQ39C	CCTO-390	CNO-439	10TCC-Q39
C24	56 NPO 10%			TCZ-56	CHQ56C	CCTO-560	CNO-456	10TCC-Q56
C25	22 NPO 10%		NPO-DI 22	DTZ-22	CHQ22C	CCTO-220	CNO-422	10TCC-Q22
C26	.01		BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C27	.1 800V		P888N-1	DF-104	CUB5P1	6DP-4-104	GEM-601	6TM-P10
C28	.01		BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C29	.033 600V		P888N-033	DD-303	CUB5S33	6DP-3-333	GEM-6133	6TM-S33
C30	.01 600V		P888N-01	DS-103	CUB5S1	6DP-3-103	GEM-611	6TM-S10
C31	75		N750-DI 75	DTN-75	CHQ75U	CCTN-750	CNT-475	10TCU-Q75
C32	47 NPO 10%		NPO-DI 47	DTZ-47	CHQ47C	CCTO-470	CNO-447	10TCC-Q47
C33	.01		BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C34	.0015 10%		DI-1500	DD-152	SR5DI5	CCD-152	GP315	10TE-D15
C35	.01		BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C36	.0015 10%		DI-1200	DD-152	SR5DI5	CCD-152	GP215	10TE-D15
C37	.01		BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C38	.002		BPD-002	DD-302	BYA10D2	CCD-302	B-230	5HK-D20
C39	.01		BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C40	.01		BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C41	.01		BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C42	680 10%		DI-680	DD-681	SR5T68	CCD-681	GP368	10TE-T68
C43	.022 400V		P488N-022	DD-303	CUB5S22	6DP-3-223	GEM-6122	6TM-S22
C44	.01 600V		P888N-01	DS-103	CUB5S1	6DP-3-103	GEM-611	6TM-S10
C45	470 1000V		DI-470	DD-471	BYA10T47	CCD-471	B-347	10TE-T47
C46	.1 200V		P388N-1	DF-104	CUB3P1	3DP-3-104	GEM-301	3TM-P10
C47	.0033 600V		P488N-0033	DS-332	CUB5D33	6DP-1-332	GEM-6233	6TM-D33
C48	470		DI-470	DD-471	BYA10T47	CCD-471	B-347	10TE-T47
C49	.01 600V		P888N-01	DS-103	CUB5S1	6DP-3-103	GEM-611	6TM-S10
C50	.0047 600V 10%		V84C5D47-10%		PMSD47	6DP-1-472	GEM-16247	6TM-D47
C51	.022 600V		P888N-033	DD-303	CUB5S22	6DP-3-223	GEM-6122	6TM-S22
C52	.0047 600V 10%		V84C5D47-10%		PMSD47	6DP-1-472	GEM-16247	6TM-D47
C53	.1 600V		P888N-1	DF-104	CUB5P1	6DP-4-104	GEM-601	6TM-P10
C54	.1 200V		P388N-1	DF-104	CUB3P1	3DP-3-104	GEM-301	3TM-P10
C55	.001 600V 10%		V84C5D1-10%	DD-103	PM5S1	6DP-1-102	GEM-1621	6TM-D10
C56	.01 600V		P888N-01	DS-103	CUB5S1	6DP-3-103	GEM-611	6TM-S10
C57	56 NPO 5%			DTZ-56	CHQ56C	CM-19H-560J	CNO-456	10TCC-Q56
C58	68 NPO 5%			DTZ-68	CHQ68C	CM-19H-680J	CNO-468	10TCC-Q68
C59	.001 400V 10%		V84C5D1-10%	DD-103	PM5D1	6DP-1-102	GEM-1621	6TM-D10
C60	.15 200V		P388N-15		CUB3P15	3DP-3-154	GEM-3015	3TM-P15
C61	.001	10%	1469-001	DD-102	SR5DI	CCD-102	GP210	10TE-D10
C62	.004	10%	1484-004		SR5D4	CM-20S-402K	MCE463	MS-34
C63	68 NPO 5%			DTZ-68	CHQ68C	CM-19H-680J	CNO-468	10TCC-Q68
C64	470 5%		1469-00047		SR5T47	CM-19H-470J	MCJ344	MS-347
C65	470 5%		1469-00047		SR5T47	CM-19H-470J	MCJ344	MS-347
C66	.001 400V 10%		V84C5D1-10%	DD-103	PM5D1	6DP-1-102	GEM-1621	6TM-D10
C67	.022 600V		P888N-023	DD-303	CUB5S22	6DP-3-223	GEM-6122	6TM-S22
C68	.1 600V		P888N-1	DF-104	CUB5P1	6DP-4-104	GEM-601	6TM-P10
C69	.1 600V		P888N-1	DF-104	CUB5P1	6DP-4-104	GEM-601	6TM-P10

FIXED CAPACITORS (cont)

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C70	56	NPO 10%			TCZ-56	CHQ56C	CCTO-560	CNO-456	10TCC-Q56
C71	.01			BPD-01	DD-103	BYA10SE	CCD-103	B-110	5HK-S10
C72	.033	1000V 10%	#23681			DPM33S33	1SDP-5-333	GEM-16133	10TM-S33
C73	130	5000V NI500 10%							
C74	130	2000V			DD30-131	HVB20T12	3CCD-121	2HV-312	30GA-T12
C75	130	2000V			DD30-131	HVB20T12	3CCD-121	2HV-312	30GA-T12
C76	100	3000V			DD30-101	HVB20T1	3CCD-121	2HV-312	30GA-T12
C77	.1	200V		P388N-1	DF-104	CUB4P1	2DP-3-104	GEM-201	2TM-P10

Packard-Bell Part Number

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Packard-Bell PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	25501	BP1-60	C47B-500K-2	B13-133 *	PP55A	Volume
B	Shaft			Not Req.	538-3	Not Req.	Not Req.	
C	Switch			Not Req.	Not Req.	8K7 *	Not Req.	
R2A	3meg	½	25503	F1-78			UE4223	Vert. Hold
B	50K			R2-29				Brightness
R3	5meg	½	25949	T7-87	B47-5meg-8	HLC-5	PTA561	Height
R4	5meg	½	25957	T7-84	B47-5meg-8	HLC-3	TA261	Vert. Linearity
R5A	100K	½	25933	T7-40	B47-100K-8	B11-138	PTA151	AGC
B	Shaft			Not Req.	Not Req.	T4M4	Not Req.	
R6A	25K	½	25526			B20-121X	UT-415	Contrast
B	20K Tap Shaft					8K8		
R7A	25K	½	25992	T7-26	B47-25K-8	B11-130	TA2551	Horiz. Drive
B	Shaft			Not Req.	Not Req.	T4M4	Not Req.	
R8	5meg	½	25910	T7-87	B47-5meg-8	HLC-5	PTA561	Focus

■ "BTA-LOC" Equivalent: FA361, RU54L, G3878A, 1SL375.

* Factory assembled Part #PPQ13-133 (8K7).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R9	1meg			
R10	8.2meg			
R11	1.5meg			
R12	6800Ω 7W	PW7-6800	TW-SQ-6800	Note 1
R13	13K			
R14	130Ω			
R15	470Ω			
R16	86Ω			
R17	130K			
R18	22K			
R19	6800Ω			
R20	130K			
R21	470Ω			
R22	96Ω			
R23	3300Ω			
R24	1000Ω			
R25	270Ω			
R26	1000Ω			
R27	1800Ω			
R28	68K			
R29	22K			
R30	4700Ω 7W	PW7-4700	TW-SQ-4700	
R31	82K 2W			
R32	2200Ω			
R33	22K 2W			
R34	130K			
R35	33K			
R36	3300Ω			
R37	18K			
R38	120Ω			
R39	39K			
R40	13K			
R41	13K			
R43	4.7meg			
R43	130K			
R44	470Ω			
R45	6800Ω			
R46	5600 2W			
R47	47K			
R48	47K			
R49	82K			
R50	39K			
R51	270K			
R52	3300Ω			
R53	56K			
R54	220K			
R55	4.7meg			
R56	33K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R57	470K			
R58	39K			
R59	15K			(18Ω *
R60	1.5meg			(1.5meg) *
R61	2.2meg			
R62	1.5meg			
R63	1meg			
R64	470K			
R65	1.5meg			
R66	22K			
R67	330Ω 1W			
R68	220K			
R69	33K			
R70	2200Ω			
R71	22K			
R72	220Ω			
R73	220Ω			
R74	2.2Ω (Cold)			
R75	1meg			
R76	1meg			
R77	3300Ω			
R78	470K			
R79	47K			
R80	6800Ω 1W			
R81	1200Ω			
R82	100K 5%			
R83	100K			
R84	100Ω			
R85	470K			
R86	47K 7W	PW7-47K	TW-SQ-47K	
R87	82K 2W			
R88	1.2Ω 1W			
R89	47K			
R90	33K			
R91	1meg			
R92	4700Ω 5% 5W	PW5-4700	5W-SQ-4700	(470Ω 5W) *
R93	470Ω 2W			
R94	10Ω			
R95	10Ω			
R96	100K			
R97	68K			
R98	47K			Note 2
R99	470K			
R100	470K			
R101	4700Ω			

Note 1. 4700Ω 5% 5W used with tuners #10653B, 10672.
Note 2. Not used in Chassis 88-8.

* Value used in later production chassis.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Packard-Bell PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	47.25MC Trap	29757 ①	TV-153	6235	RTC-8556	T218	①Includes C9.
L2	1st Video IF	29755	TV-131	6235	RTC-8556	T218	②Includes C18.
L3	2nd Video IF	29585	TV-130	6319	RTC-8551	T217	③Includes Complete Assy.
L4	3rd Video IF	29585	TV-130	6319	RTC-8551	T217	④Wound on 680Ω Resistor.
L5	41.25MC Trap	29566 ②	TV-152	6235	RTC-8556	T218	
L6A	4th Video IF	28750 ③					⑤Includes C31.
B	RF Choke (20uh)		TV-192	6153 *	RTC-8584	T300	† Parallel with 680Ω Resistor.
C	RF Choke (1uh)		BC-591	4602	RTC-8515	T255	
L7	RF Choke (10uh)	29566	BC-586	6613	RTC-8522	T260	
L8	Peaking (250uh)	29509	TV-185	6181	RTC-8598	T315	
L9	4.5MC Trap	29545	TV-151	1470	RTC-8603	T250	

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA: Packard-Bell PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L10	Peaking (600uh)	29713	TV-205	6146	RTC-8582	T236	
L11	Peaking (180uh)	29752A ④	TV-184 †	6180 †	RTC-8597 †	T310 †	
L12	Sound IF	29714 ⑤	TV-131	1469	RTC-8602	T249	
L13	Ratio Detector	29694	TV-133-B	1466 RD	RTC-8600	T237	
L14	RF Choke (1uh)	29646	BC-566	4613	RTC-8523	T261	
L15	RF Choke (10uh)	29646	BC-566	4613	RTC-8523	T261	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: Packard-Bell PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L16	Horiz. Stabilizer (Horiz. Hold)	29753A ①	TV-183	6211	RTC-8623	H8-7	WLC-25	T103	
L17	Width Coil (3-17MH)	29718	MWC-11	6329 ③	WC-11 ③	WC-25 ③	WLC-6 ③	T119	

① Part #29703 used in 88-8 Chassis (Model 24T2A). ③ Disregard Tap. ⑤ Drill new mounting hole.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	RATINGS: DC RES.	RATINGS: INDUCTANCE (@ CURRENT (000 Ω))	REPLACEMENT DATA: Packard-Bell PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L18	.230A	35Ω	.9 Hy.	27013 ①		C-2343		C-34X	①Alt. #27013A.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: Packard-Bell PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ② 1.8A	540VCT ② .295A DC	5V ② 3A	89076 ①		P-8356 ③		R-77BC ③	①Alt. #89076B. ③Drill new mounting hole(s). ④Phase & parallel 5A & 6A (6.3V winding). Tape 2A (6.3V winding).
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ② 8.5A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: Packard-Bell PART No.	Merit PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	89523		VO-101	26R4	A-140X	①Use original rear cover and centering device. ②Connect same as original. † Use Pt. #29758A for replacement.
T3	Alt. Vert. Output	89522B					
	Yoke (Horiz. 18.6MH) (14°) (Vert. 12MH) ②	29696 †		DY-27A ① ②	Y-52 ②	Y-60-2 ②
	Yoke (Horiz. 18.2MH) (14°) (Vert. 15MH) ②	29758 †		DY-27A ① ②	Y-52 ① ②	Y-60-1 ②
	Alt. Yoke	29758A †					
	Yoke Cover	34103					
T4	Horiz. Output	89518-D				D-200	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: Packard-Bell PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	6600Ω	3-4Ω	89515A	A-2930	A-3877	34351	S-3X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: Packard-Bell PART No.	Quam PART No.	NOTES
SP1	4"	PM	3-4Ω	83014D ①	4A07	①Used in Models 19T1, 19T3, 19T3TC.
	6" x 9"	PM	3-4Ω	83112B ②	69A3	②Used in Models 21C5, 23C5, 24T2A.
	4"	PM	8-8Ω	83078 ③	4A07Z6.8	③Used in Models 21C6, 23C6, 23C8.
	6" x 9"	PM	8-8Ω	83113B ④	69A1Z6	④Used in Models 23C7, 23T3.
	4" x 6"		3-4Ω	83132A ④	46A07	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: Packard-Bell PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M1	1N295 †	T2053 *	6GC1 *	1N295 †	1N295 †	*Dual Selenium, Common Cath. Type †Video Detector (Pigtail)
M2						

MISCELLANEOUS

ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M3	Tuner	10688A	VHF, Used in Chassis 88-8, STANDARD COIL REPLACEMENT #GG4220A
	Tuner	10653B	VHF with UHF Provisions, Used in Chassis 88-9
	Tuner	10677	VHF, Used in Chassis 88-8
	Tuner	10672	VHF with UHF Provisions, Chassis 88-8
	Antenna	29429	Model 24T3A. JFD REPLACEMENT #TA543
M4	Circuit Breaker	88718A	
M5	Power Tuning Assy.		Includes Motor, Part #88088B, Chassis 88-9

PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	55143	19" Models
Safety Glass	55090A	21" & 23" Models
Safety Glass	55096C	Model 24T2A
Mask	55153A	19" Models
Mask	55120	21" Models
Mask	55154B	23" Models
Mask	55107A	Model 24T2A
Knob-Channel Select	52333C	
Knob-Fine Tune	52329	Chassis 88-8 (Except Ebony Models)
Knob-Fine Tune	52358	Chassis 88-8 (Ebony Models)
Knob-Fine Tune	52345	Outer, Chassis 88-9
Knob-Fine Tune	52354	Outer, Chassis 88-9 (Ebony Models 19T3TC, 23C8)
Knob-Fine Tune	52348	Inner, Chassis 88-9
Knob-Fine Tune	52356	Inner, Chassis 88-9 (Ebony Models 19T3TC, 23C8)
Knob-Volume	52330	Chassis 88-8 (Except Ebony Models)
Knob-Volume	52357	Chassis 88-8 (Ebony Models)
Knob-Volume	52330	Chassis 88-9
Knob-Volume	52357	Chassis 88-9 (Ebony Models 19T3TC, 23C8)
Knob-Vert. Hold	52331	Chassis 88-8 (Except Ebony Models)
Knob-Vert. Hold	52353	Chassis 88-8 (Ebony Models)
Knob-Vert. Hold	52331	Chassis 88-9
Knob-Vert. Hold	52353	Chassis 88-9 (Ebony Models 19T3TC, 23C8)
Knob-Brightness	52332	Chassis 88-8 (Except Ebony Models)
Knob-Brightness	52355	Chassis 88-8 (Ebony Models)
Knob-Brightness	52332	Chassis 88-9
Knob-Brightness	52355	Chassis 88-9 (Ebony Models 19T3TC, 23C8)
Disc	52352A	
Knob-Contrast	52257A	
AC Power Cord	32038	3 Prong Type (Model 24T2A)
AC Power Cord	32037	All Models (Except 24T2A)

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

VHF TUNER PARTS LIST AND DESCRIPTIONS

10686A

TUBES

• GENERAL ELECTRIC •			• RAYTHEON •			• SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6FH5	V202	Mixer - Osc.	6CG8A			

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120 N750 10%			TCN-120	C10T12U	CCTN-121	CN7-412	10TCU-T12
C202	15		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C203	30							
C204	15		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C205	.001		EF-001	MFT-1000		CCF-102	CT280A	
C206	1.8-7			829-7				
C207	100		EF-0001	MFT-100				
C208	.5-3			829-3		CV-1	CT565	
C209	33		NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-433	10TCC-Q33
C210	.5-3			829-3		CV-1	CT565	
C211	2 N1500 10%					*		
C212	.001		BPD-001	DD-102	BYA10DI	CCD-102	GP210	10TS-D10
C213	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C214	.001		BPD-001	DD-102	BYA10DI	CCD-102	GP210	10TS-D10
C215	7.25							
C216	18							
C217	.001		EF-001	MFT-1000		CCF-102	CT280A	
C218	.001		EF-001	MFT-1000		CCF-102	CT280A	
C219	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C220	.001		EF-001	MFT-1000		CCF-102	CT280A	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	47K				R205	1000Ω			
R202	1000Ω				R206	4700Ω			
R203	4700Ω				R207	4700Ω			
R204	220K								

REMOTE CONTROL RECEIVER
PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC / RAYTHEON / SYLVANIA)
V16	1st RF Amplifier	6AU8
V17	2nd-3rd RF Amplifier	12AX7A
V18	Driver-45.25KC - 40.25KC Rectifier	6BN8
V19	Channel Selector - Volume Relay Control Amp.	6CM7
V20	Power Rectifier	6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Packard-Bell PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C78A	■20	350	24215	AFH3-138	C0945	FP345.5	TMT-3637	TVL-3749	
B	▲10	350							
C	50	50							

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C79	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C80	330			DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C81	.05			BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50
C82	150			DI-150	DD-151	L10T15	CCD-151	B-315	10TS-T15
C83	120	N1500	#23811				*		
C84	120	N1500	#23811				*		
C85	120	N1500	#23811				*		
C86	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C87	680	5%		1469-00068		5R5T68	CM-19B-68LJ	MCJ249	MS-368
C88	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C89	.022	400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C90	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C91	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C92	.033	400V		P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C93	680	5%		1469-00068		5R5T68	CM-19B-68LJ	MCJ249	MS-368
C94	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C95	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Packard-Bell Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R102	1meg			
R103	1meg			
R104	100K			
R105	470K			
R106	150K			
R107	470K			
R108	100K			
R109	100K			
R110	100K			
R111	100K			
R112	100K			
R113	2.2meg			
R114	39K 1W			
R115	2.2meg			
R116	2.2meg			
R117	1meg			
R118	1meg			
R119	8200Ω			
R120	3.9meg			
R121	1meg			
R122	6800Ω			
R123	22K			
R124	2200Ω 1W			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Packard-Bell PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L19	45.25KC	29761					
L20	40.25KC	29762					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Packard-Bell PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	117V @ .2A	440VCT @ .030A DC	6.3V @ 2.2A	89089 ①					①Alternate Part #89089A.

MISCELLANEOUS

ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M6	Relay	72061	Channel Select
M7	Relay	72081	Stepping (Volume)
M8	Switch	86827	Remote Off-On (DPDT Slide Type)
M9	Microphone	57015	Transducer

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A213, A214, A215..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Set the Fine Tuning to the center of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

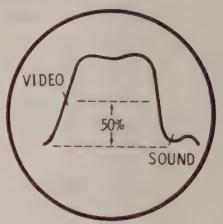


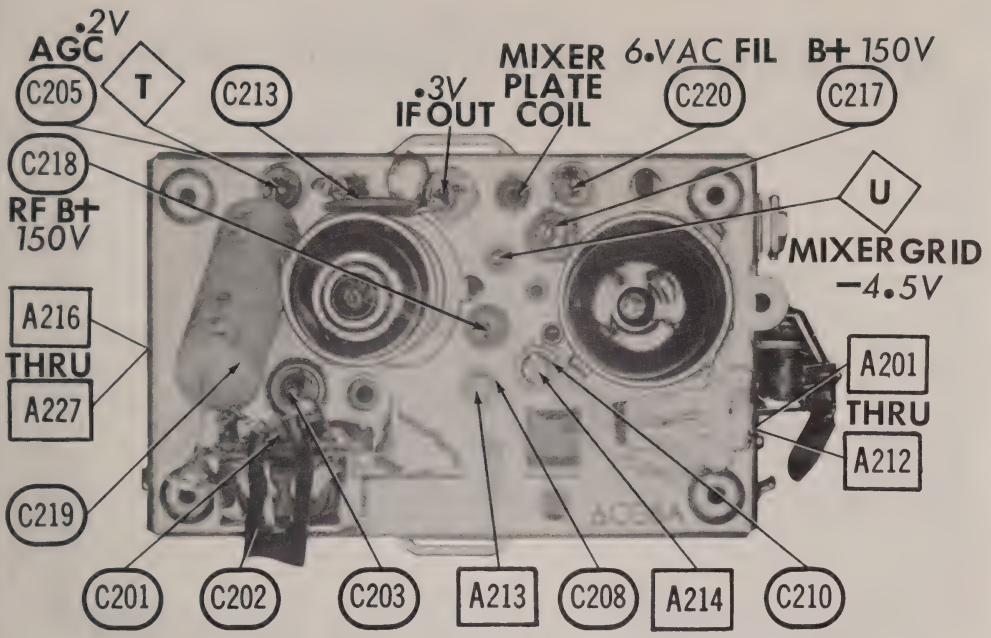
FIG. 201

VHF RF AND MIXER ALIGNMENT

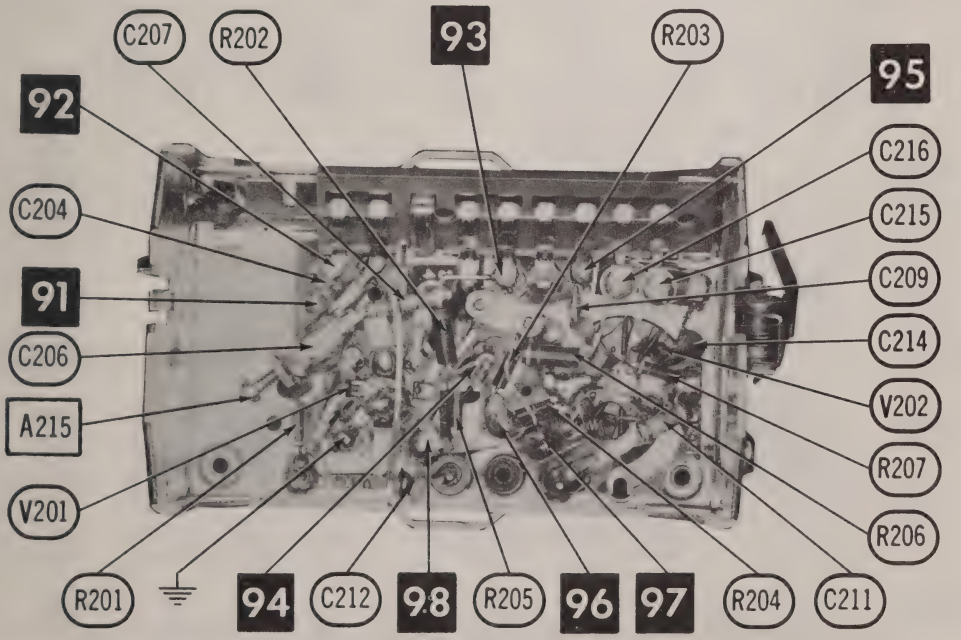
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point ⓓ. Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point ⓓ. Low side to chassis.	A213, A214, A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope. Restore bias.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by compressing or expanding coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

FIG. 202



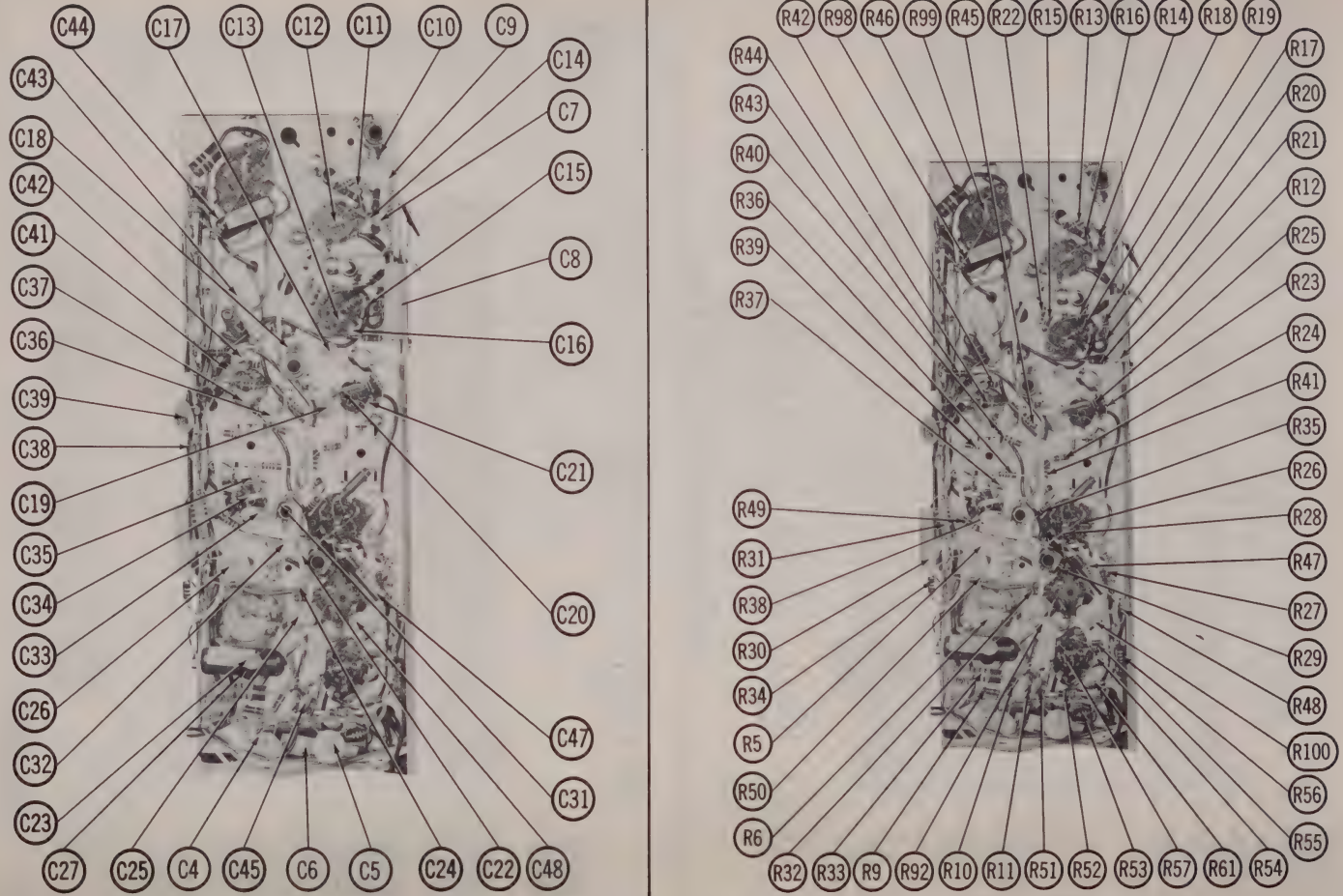
VHF TUNER 10686A - TOP VIEW



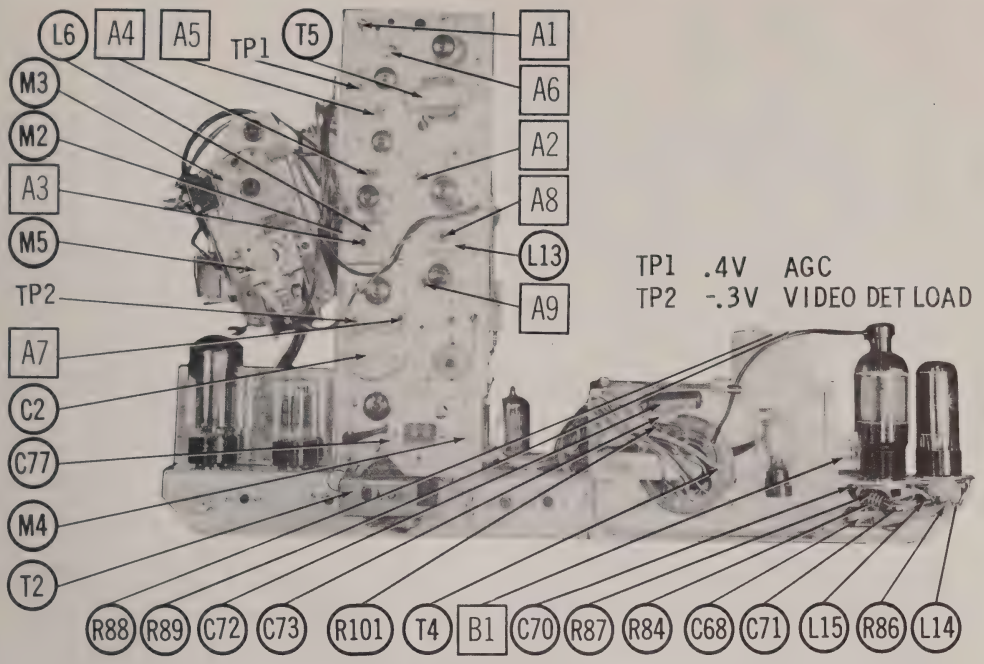
A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

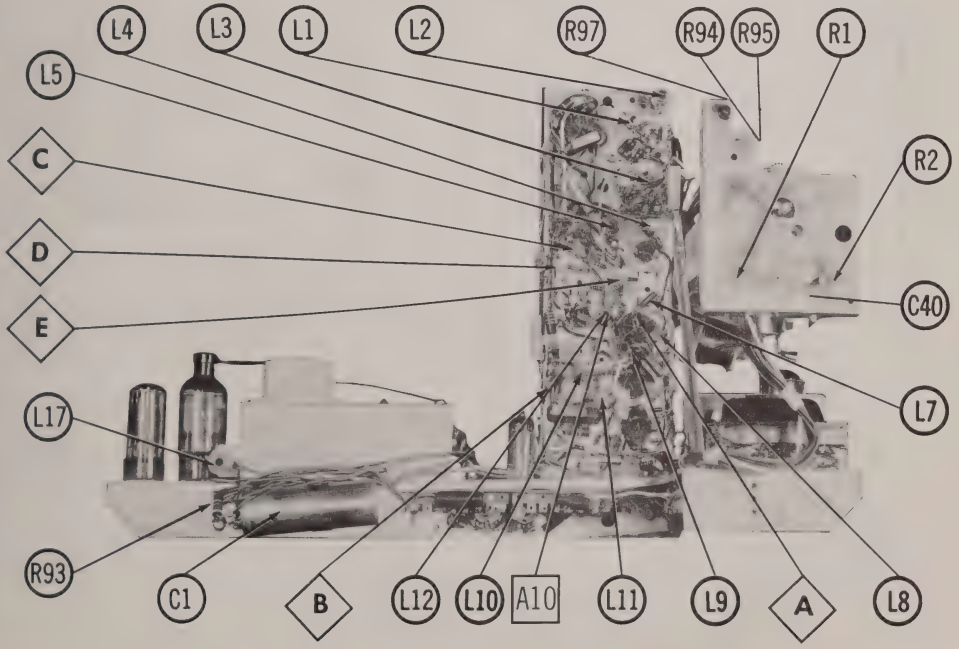
VHF TUNER 10686A - BOTTOM VIEW



(CAPACITOR IDENT.) VIDEO, SOUND, SYNC CHASSIS - BOTTOM VIEW (RESISTOR IDENT.)

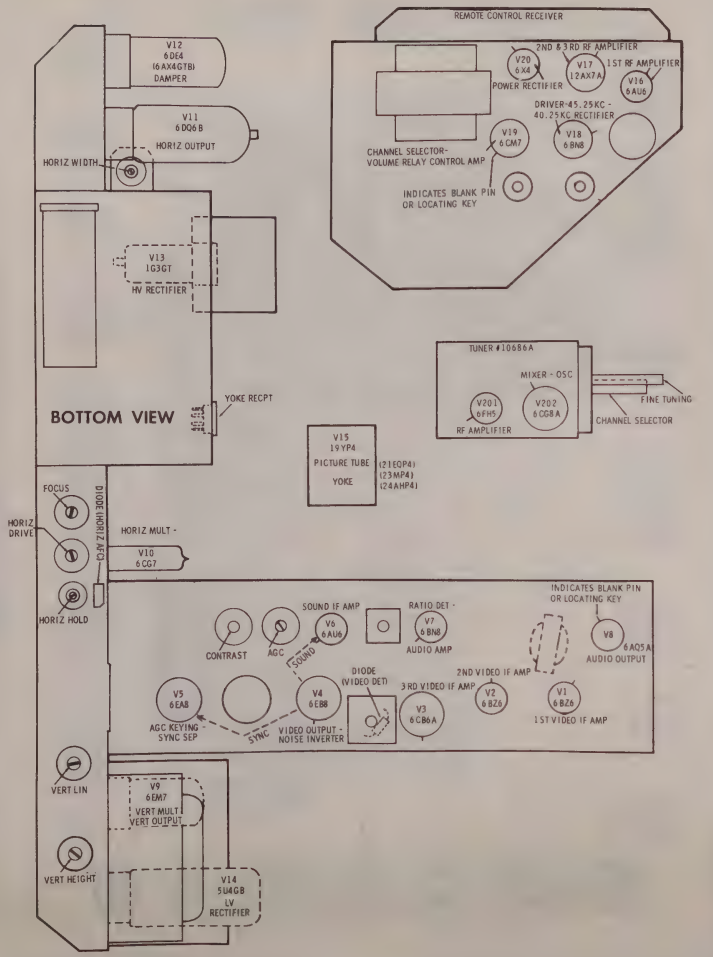


TV CHASSIS - REAR VIEW



TV CHASSIS - FRONT VIEW

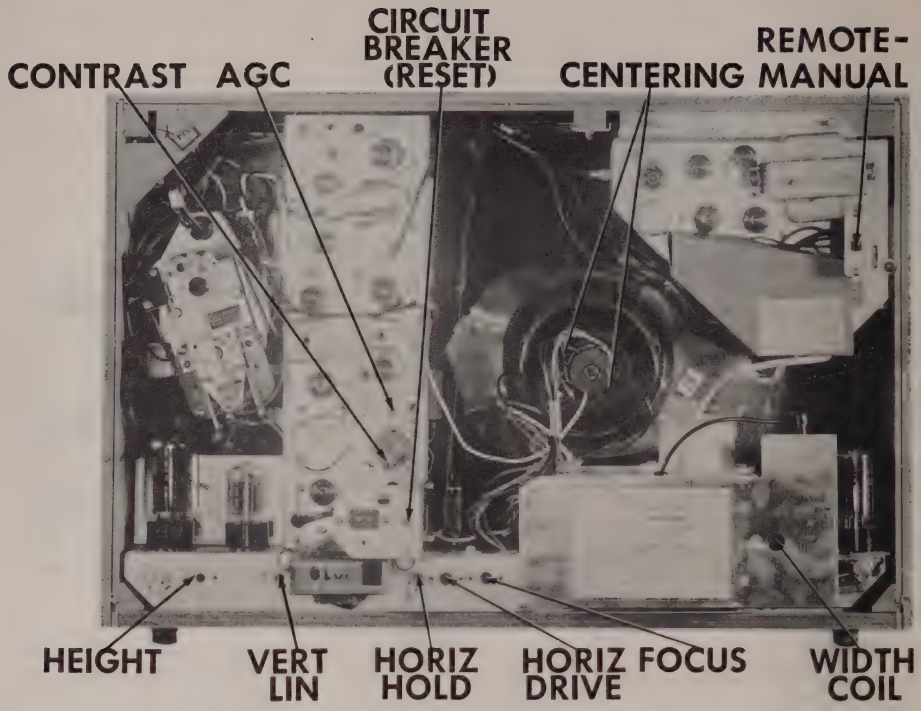
TUBE PLACEMENT CHART



RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	68K	56Ω	FIL	FIL	▪526Ω	▪526Ω	0Ω		
V2	6BZ6	63K	70K	FIL	FIL	†505Ω	†505Ω	70K		
V3	6CB6A	.1Ω	270Ω	FIL	FIL	†5700Ω	†5700Ω	0Ω		
V4	6EB8	1800Ω	71K	†24K	FIL	FIL	0Ω	2800Ω	†22K	†4000Ω
V5	6EA8	†474K	•55K	†35Ω	FIL	FIL	330K	†4700Ω	0Ω	4.7meg
V6	6AU6	1Ω	0Ω	FIL	FIL	†8000Ω	†23K	120Ω		
V7	6BN8	INF	24K	INF	FIL	FIL	0Ω	†220K	4.7meg	450Ω
V8	6AQ5A	NC	560Ω	FIL	FIL	†400Ω	†35Ω	470K		
V9	6EM7	•3meg	†765Ω	330Ω	•3.8meg	••4meg	0Ω	FIL	FIL	
V10	6CG7	†100K	100K	1200Ω	FIL	FIL	†6900Ω	2.2meg	1200Ω	0Ω
V11	6DQ6B	TP	FIL	NC	†47K	540K	TP	FIL	0Ω	TOP CAP †18Ω
V12	6DE4	NC	TP	180K	NC	†35Ω	TP	FIL	FIL	
V13	1G3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †470Ω
V14	5U4GB	NC	¶40K	NC	23Ω	NC	25Ω	NC	¶40K	
V15	19YP4	FIL	22K	†1meg	••1.3meg	NC	NC	•150K	FIL	
V16	6AU6	2.9meg	0Ω	FIL	FIL	††152K	††472K	0Ω		
V17	12AX7A	††102K	2.4meg	0Ω	FIL	FIL	††102K	2.4meg	0Ω	FIL
V18	6BN8	48Ω	2.2meg	2.2meg	FIL	FIL	42Ω	††41K	100K	0Ω
V19	6CM7	††5000Ω	NC	8200Ω	FIL	FIL	††2500Ω	3.2meg	3.2meg	8200Ω
V20	6X4	290Ω	NC	FIL	FIL	NC	300Ω	¶		
V201	6FH5	0Ω	2.6meg	FIL	FIL	†7800Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	†8900Ω	0Ω	FIL	FIL	†7800Ω	†4200Ω	0Ω	225K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 2 OF V14.
†† MEASURED FROM PIN 3 OF V12.
NC NO CONNECTION
▪ MEASURED FROM PIN 2 OF V2.
•• MEASURED FROM PIN 7 OF V20.
TP TIE POINT



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Suggested Alignment Tools:
GENERAL CEMENT #5003, 8271, 8275, 8276, 8609, 8721, 8722, 9150,
WALSCO #2516, 2518, 2519 9298

Turn the set on and tune in a TV station, preferably with a test pattern.

Set Brightness and Contrast for a normal picture.

Turn the Horizontal Hold (Freq. Slug) clockwise until the picture loses sync. It may be necessary to switch off channel and back again for the picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

Turn to an unused channel. If vertical lines appear near the center of the screen, slowly adjust the Horizontal Drive Control until the white lines disappear.

If the Horizontal Drive was adjusted, tune in a TV station and readjust the Horizontal Hold as above.

Adjust the Adjust Width Slug (B1) for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.

DISASSEMBLY INSTRUCTIONS

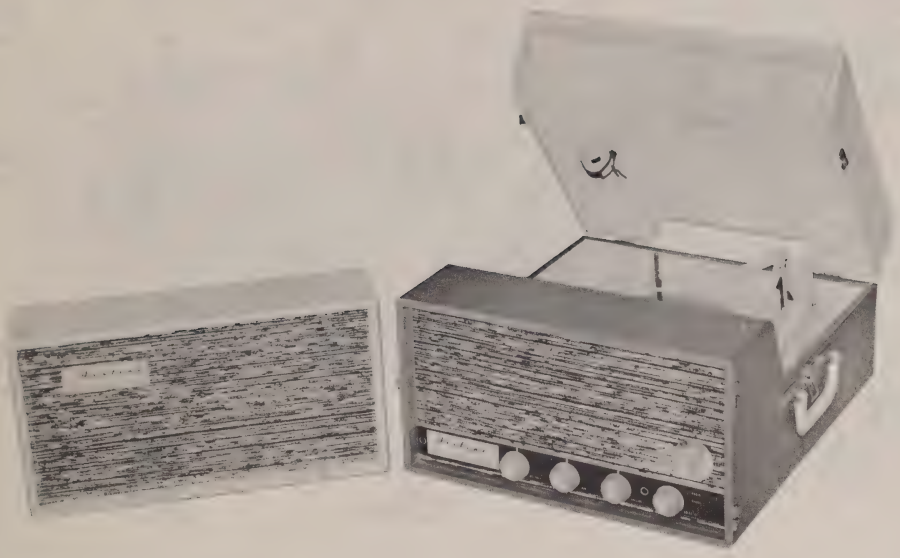
CHASSIS REMOVAL-TV & REMOTE CONTROL RECEIVER-MODEL 19T3

1. Remove 5 wood screws holding rear cover; disconnect antenna leads, remove rear cover.
2. Remove 4 push-on type knobs at front of cabinet.
3. Disconnect 3 plugs from remote control receiver and remove 3 chassis screws.
4. Remove remote control receiver chassis.
5. Disconnect hi voltage lead, yoke plug, speaker leads, and picture tube grounding spring.
6. Remove 3 TV chassis bolts.
7. Remove VHF Tuner and control panel.
8. Unplug pilot lamp connecter board.
9. Remove TV chassis.

PHOTOFACT® Folder with CIRCUITRACE®

**AIRLINE MODEL
JWR-1049A**

AIRLINE MODEL
JWR-1049A



AIRLINE MODEL
JWR-1049A

TRADE NAME	Airline Model JWR-1049A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago 7, Illinois
TYPE SET	AC Operated 5 Tube AM Receiver with Stereo Amplifier and 4 Speed Automatic Record Changer
POWER SUPPLY	105 — 125 Volts AC, 60 Cycles RATING 34 Watts, .35 Amp. @117 Volts AC (Less Motor)
TUNING RANGE—BROADCAST	535 — 1620KC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4...GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A7..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A6..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A5	"
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 545 FOLDER 3

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12BE6	V4	Left Channel Output	35C5
V2	IF Amplifier	12BA6	V5	Right Channel Output	35C5
V3	Left Channel AF Amp. - Right Channel AF Amp.	12AX7			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	150	150	14643	PR3-020	BBRD0246	WD235	TDLD-14	TVA-2535	
B	50	150				TC49			

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C3	50000		BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50
C4	470		DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C5	270		DI-270	DD-271	L10T27	CCD-271	B-327	10TS-T27
C6	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C7	270	(220) †	DI-270	DD-271	L10T27	CCD-271	B-327	10TS-T27
C8	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	.06 200V		P288N-06		CUB6S6	6DP-3-603	GEM-416	6TM-S60
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	.06 200V		P288N-06		CUB6S6	6DP-3-603	GEM-416	6TM-S60
C13	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C14	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

† Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5meg	½	13229	B-88	AD47-5meg-S		FA56A	Volume, Left Channel
B	5meg	½		SR-88	Not Req.		RU56A	Volume, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R2A	50K	½	14642	B-32	AD47-50K-S		FB54A	Tone, Left Channel
B	50K	½		SR-32	Not Req.		RU54A	Tone, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	1meg	½	13501	B-69	A47-1meg-S	Q11-137	U54	Balance
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

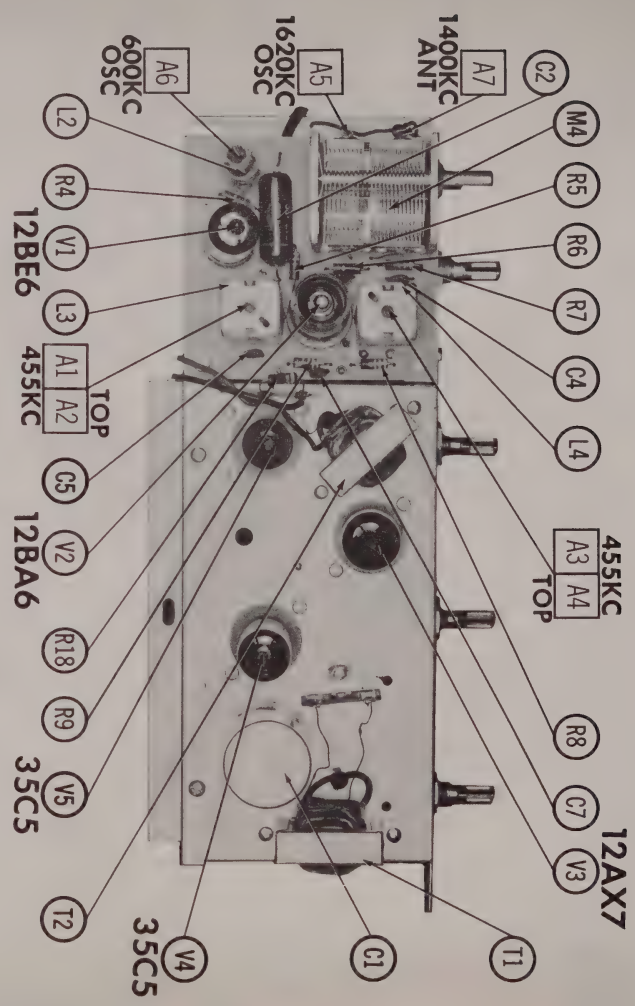
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	22K			
R5	3.3meg			
R6	120Ω			
R7	3.3meg			
R8	47K			
R9	470K			
R10	270K			
R11	270Ω			
R12	47K			
R13	180Ω			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R14	270K			
R15	270Ω			
R16	47K			
R17	180Ω			
R18	47Ω			
R19	1000Ω 2W			
R20	47Ω			Pt. #14132
R21	65Ω 7W	PW10-65	10W-SQ-65	
R22	2.2meg			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		AIRLINE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	14841	BC-419	705-A		T532	
L2	Osc.	14846					
L3	Input IF	14844	BC-356	13-PC1	RTC-8641	T614	
L4	Output IF	14845	BC-357	13-PC2	RTC-8642	T615	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3400Ω	3-4Ω	13706	A-3025	A-3332	24S48	S-16X	
T2	3400Ω	3-4Ω	13706	A-3025	A-3332	24S48	S-16X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3-4Ω	14450	52A1	
SP2	5 1/4"	PM	3-4Ω	14450	52A1	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	AIRLINE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.075A	13782	1N1763	2F4	SR200	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	AIRLINE PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2	60-60	Not Req.	13T	Not Req.	13	Not Req.	10TB-2S	N-10T2-S	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		AIRLINE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3	1N84	14944		1N84	1N84	Detector (Pigtail)

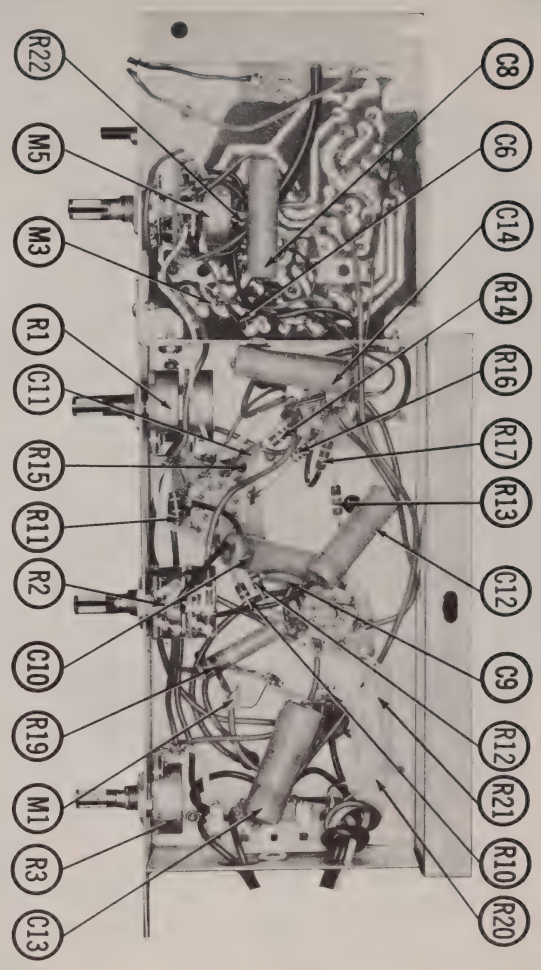
MISCELLANEOUS

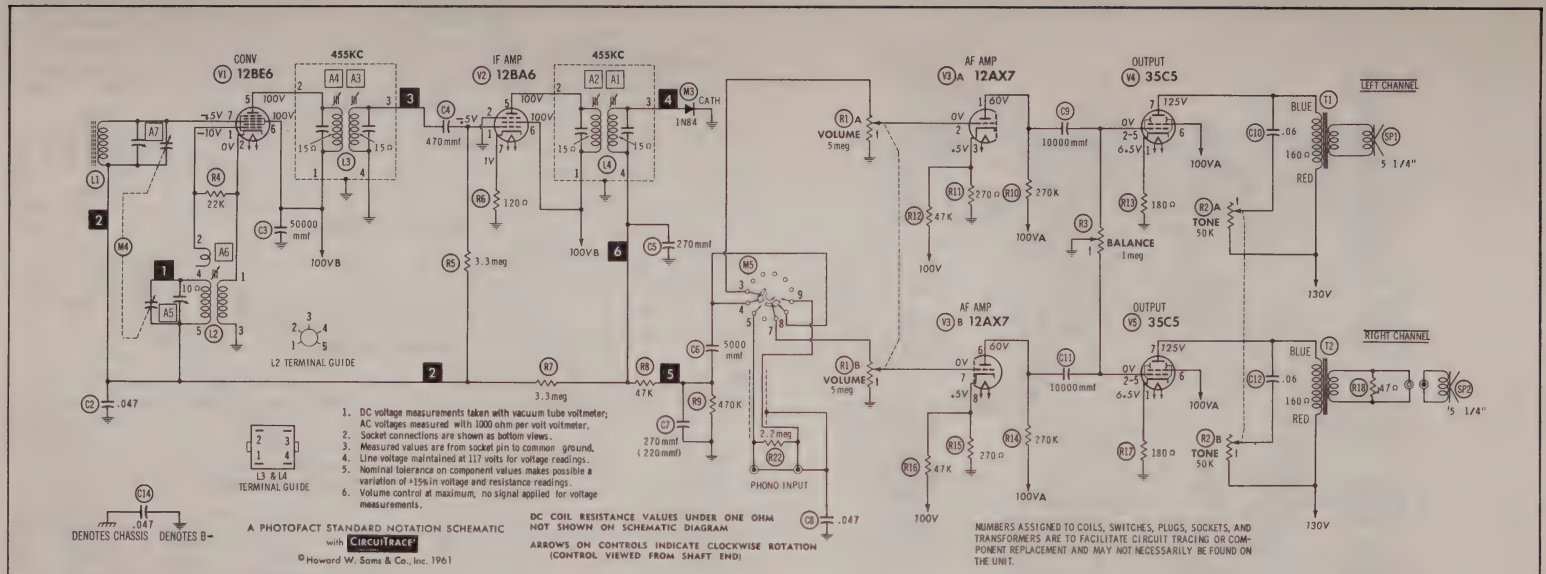
ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Tuning Cap.	14842	2 Gang
M5	Switch		Function Selector(Rotary Wafer, Includes Off-On Switch)

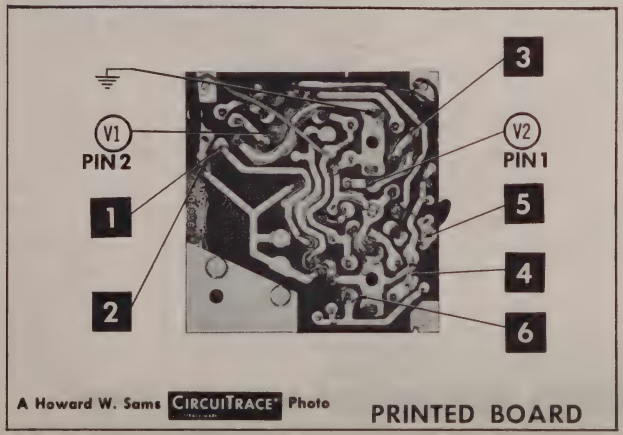
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW




CONV V1 12BE6
455KC
IF AMP V2 12BA6
455KC
AF AMP V3A 12AX7
OUTPUT V4 35C5
AF AMP V3B 12AX7
OUTPUT V5 35C5
LEFT CHANNEL
RIGHT CHANNEL
VOLUME 5meg
BALANCE 1meg
TONE 50K
100VA
100VB
100V
130V
L2 TERMINAL GUIDE
L3 & L4 TERMINAL GUIDE
PHONO INPUT
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.
DENOTES CHASSIS
DENOTES B−
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
© Howard W. Sams & Co., Inc. 1961
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.



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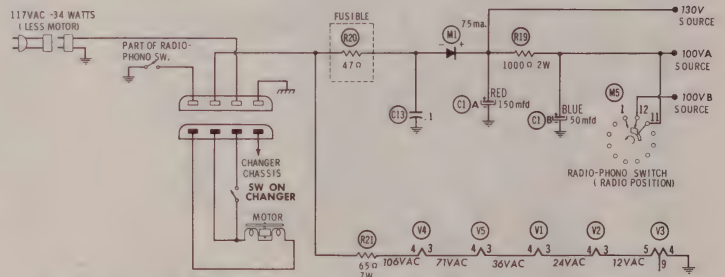
PRINTED BOARD



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BE6	22K	.8Ω	30Ω	45Ω	†1000Ω	†1000Ω	3.6meg		
V2	12BA6	6.9meg	0Ω	15Ω	30Ω	†1000Ω	†1000Ω	120Ω		
V3	12AX7	†270K	0Ω	270Ω	0Ω	15Ω	†270K	0Ω	270Ω	NC
V4	35C5	180Ω	500K	90Ω	135Ω	500K	†1000Ω	†160Ω		
V5	35C5	180Ω	500K	45Ω	90Ω	NC	†1000Ω	†160Ω		

ALL MEASUREMENTS MADE IN "RADIO" POSITION.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

AIRLINE MODEL JWR-1049A

PHOTOFACT® Folder with CIRCUITRACE®

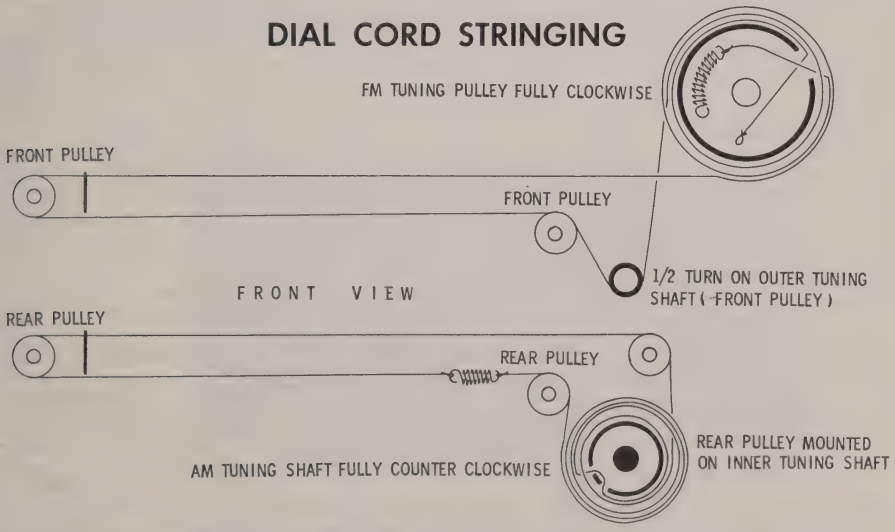
BLAUPUNKT MODEL 20003/20013 (Ballett)

BLAUPUNKT MODEL
20003/20013 (Ballett)

BLAUPUNKT MODEL
20003/20013 (Ballett)

TRADE NAME	Blaupunkt Model 20003/20013 (Ballett)
IMPORTER	N. Pickens Import Co., 64-01 Woodside Ave., Woodside 77, N. Y.
TYPE SET	AC Operated 5 Tube FM-BC-SW Receiver
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 40 Watts, .38 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	515–1620KC FREQ. MOD. 88 – 108MC SHORT WAVE 5–13MC

DIAL CORD STRINGING


FM TUNING PULLEY FULLY CLOCKWISE
FRONT PULLEY
FRONT PULLEY
1/2 TURN ON OUTER TUNING SHAFT (FRONT PULLEY)
FRONT VIEW
REAR PULLEY
REAR PULLEY
REAR PULLEY MOUNTED ON INNER TUNING SHAFT
AM TUNING SHAFT FULLY COUNTER CLOCKWISE

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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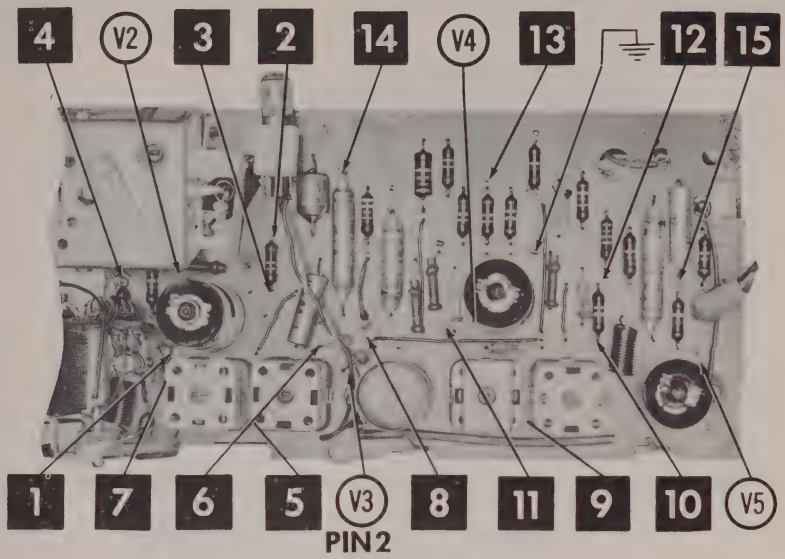
KK668

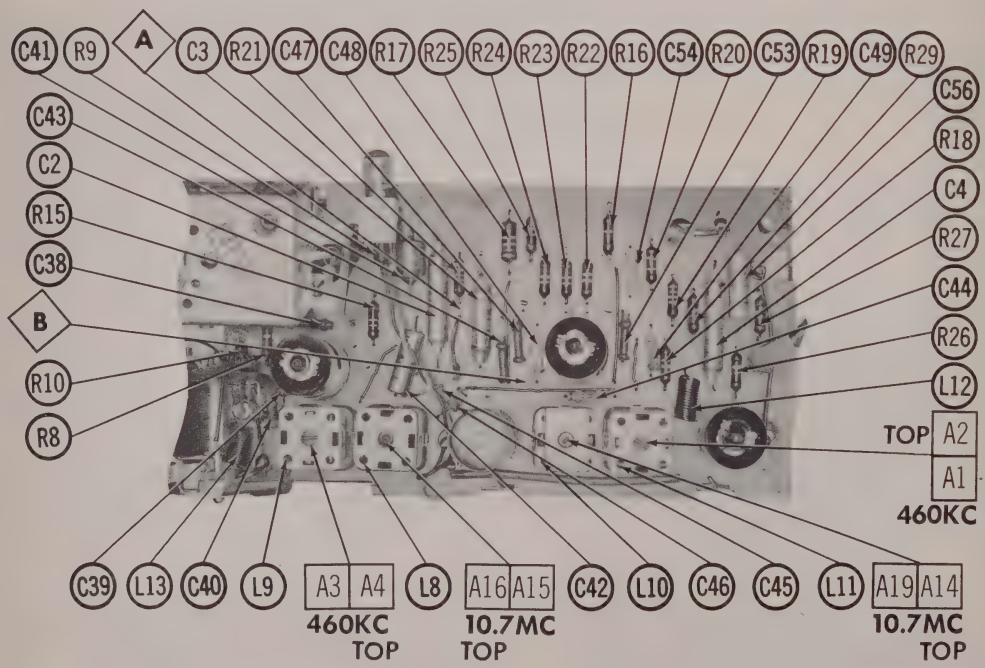
SET 545 FOLDER 4



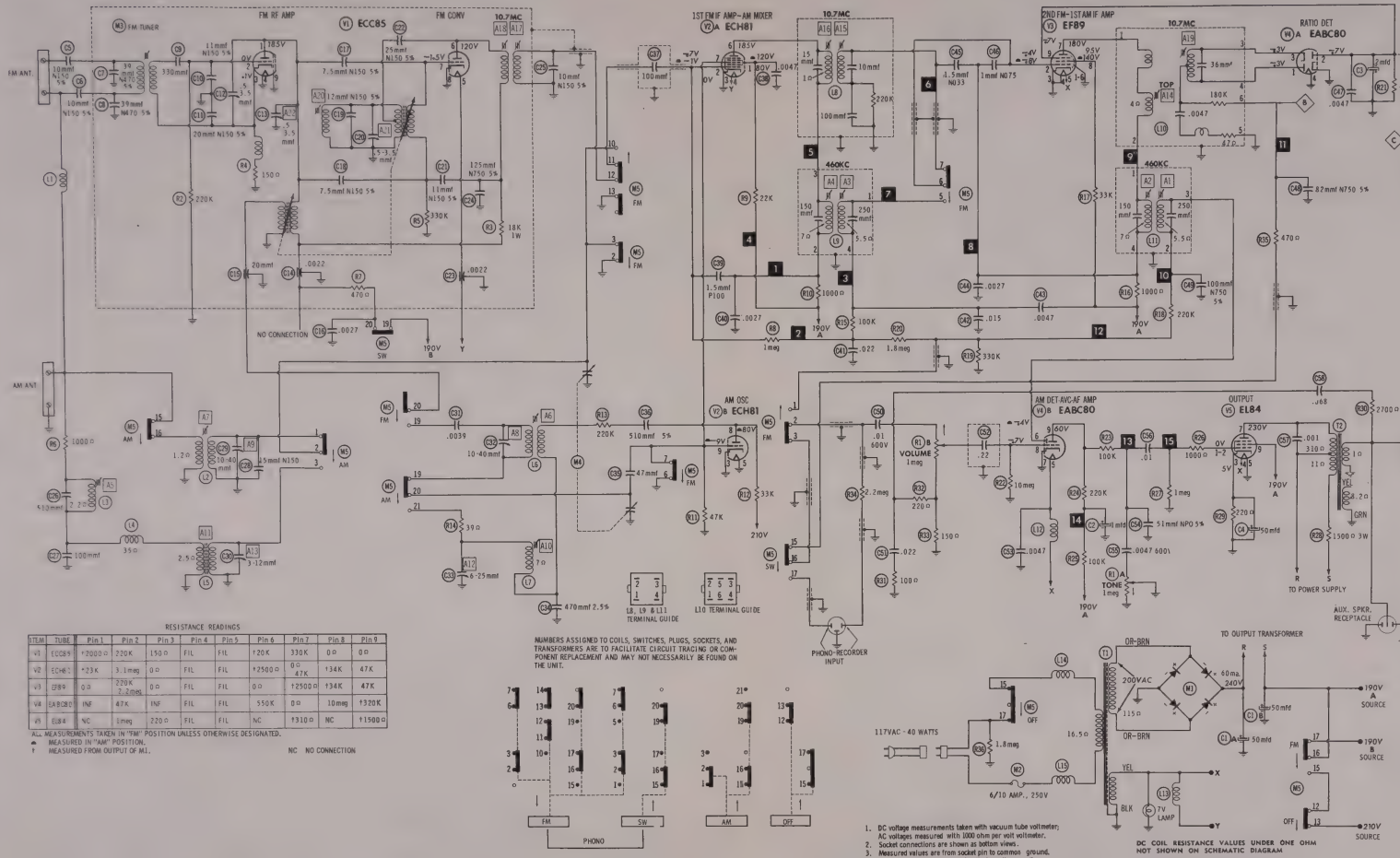
A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PRINTED BOARD



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	*2000Ω	220K	150Ω	FIL	FIL	†20K	330K	0Ω	0Ω
V2	ECH81	*23K	3.1meg	0Ω	FIL	FIL	†2500Ω	0Ω 47K	†34K	47K
V3	EF89	0Ω	220K 2.2meg	0Ω	FIL	FIL	0Ω	†2500Ω	†34K	47K
V4	EABC80	INF	47K	INF	FIL	FIL	550K	0Ω	10meg	†320K
V5	EL84	NC	1meg	220Ω	FIL	FIL	NC	†310Ω	NC	†150Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED IN "AM" POSITION.
† MEASURED FROM OUTPUT OF M1.

NC NO CONNECTION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

PUSHBUTTONS SHOWN IN "FM" POSITION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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BLAUPUNKT MODEL 20003/20013 (Ballett)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A4.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A5, A6, A7, A10, A11, A14 thru A20..	GENERAL CEMENT #8282, 8606, 8606-L, 9091 WALSCO #2526, 2541, 2542, 2543, 2544
A8, A9, A12, A13, A21, A22...	GENERAL CEMENT #5000, 5003, 8276, 8290 WALSCO #2512, 2515, 2522, 2523, 2525, 2537

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side to AM antenna terminal. Low side to chassis.	460KC (400% 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	"	"	A5	Adjust for MINIMUM output.
3.	"	5MC	(SW) 5MC	"	A6, A7	Adjust for maximum output.
4.	"	11.8MC	11.8MC	"	A8, A9	"
5.	"	546KC	(AM) 546KC	"	A10, A11	"
6.	"	1500KC	1500KC	"	A12, A13	Adjust for maximum output. Repeat Steps 2 thru 6.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	High side to ungrounded tube shield floating over FM Converter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A14, A15, A16, A17, A18	Adjust for maximum deflection.
8.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A19	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	High side to ungrounded tube shield floating over FM Converter. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A14, A15, A16, A17, A18	Disconnect stabilizing capacitor C3. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C3.
8.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A19	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	Across FM antenna socket with 120Ω in each lead.	91MC	(FM) 91MC	DC probe to point Ⓐ. Common to chassis.	A20	Adjust for maximum deflection.
10.	"	105MC	105MC	"	A21	"
11.	"	100MC	100MC	"	A22	"

FIG. 1

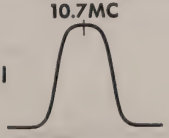
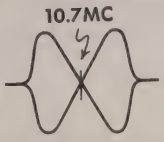
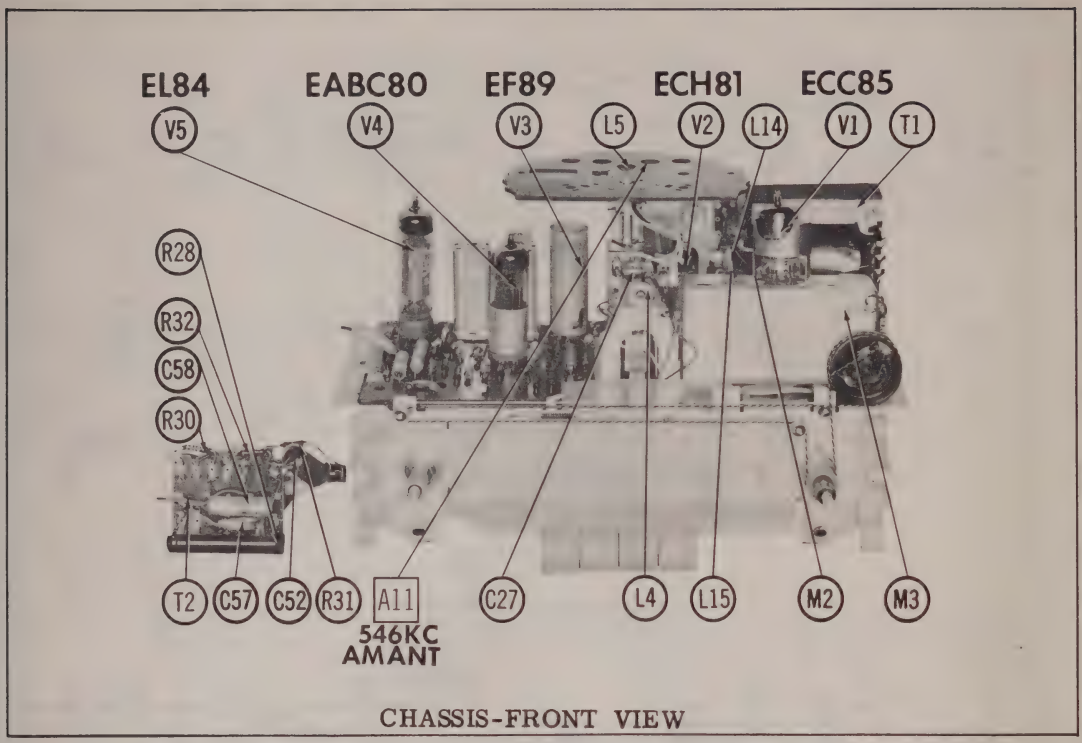
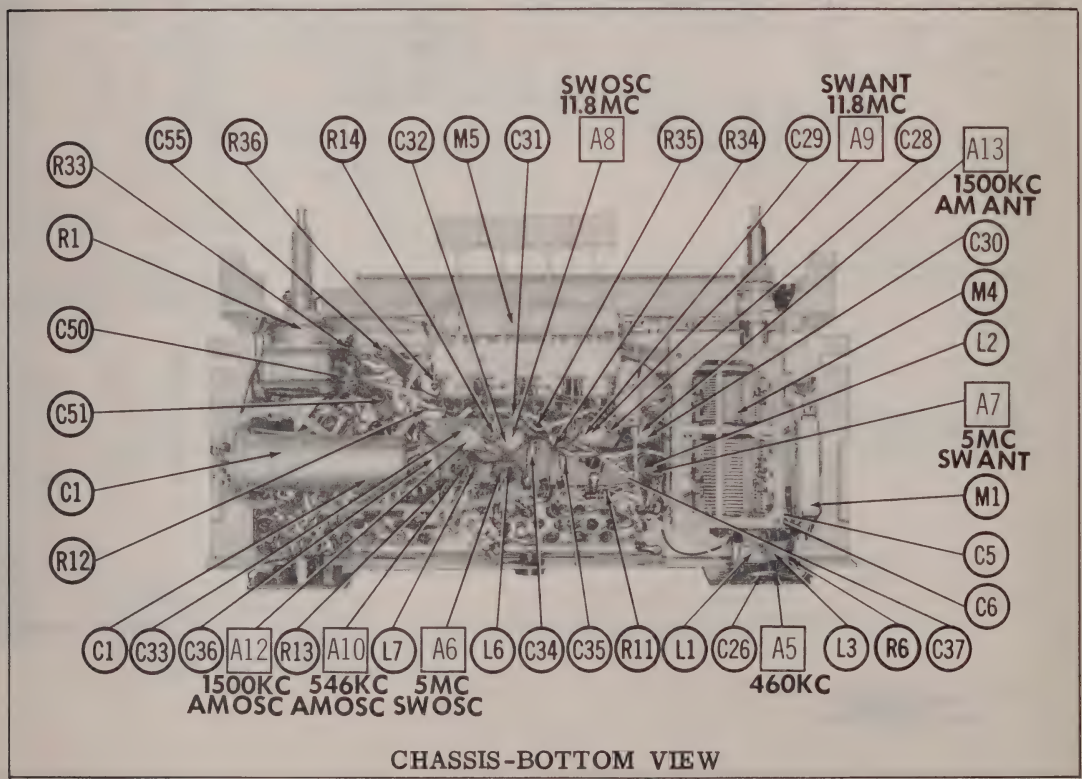


FIG. 2





CHASSIS-FRONT VIEW



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp.-FM Conv.	ECC85	V4	Ratio Detector-AM Det.-AVC-AF Amp.	EABC80
V2	1st FM IF Amplifier-AM Mixer-AM Osc.	ECH81	V5	Output	EL84
V3	2nd FM-1st AM IF Amp.	EF89			

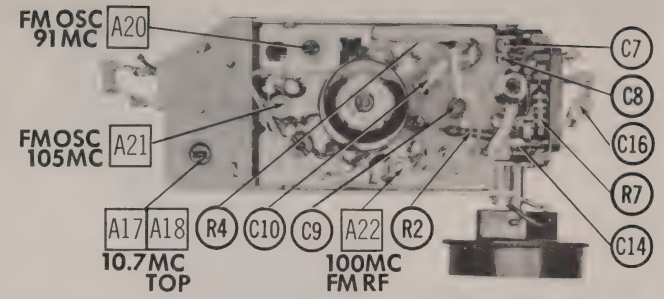
ELECTROLYTIC CAPACITORS

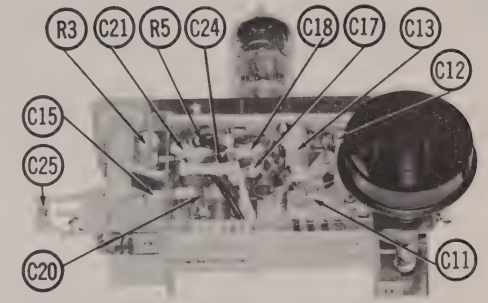
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BLAUPUNKT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲50	350			B0322	WP227.35	TMS-1630	TVL-1622	
B	▲50	350					TD-50-350	TVA-1713	
C2	1	350		PRS1700	BR145	TC595	TD-2-350	TVA-1700	
C3	2	30		PTT88	NLW2-50	TC302	MLV2-50	TE-1301	
C4	50	12		PTT59	NLW50-15	TT15X50	MLV50-12	TE-1133	

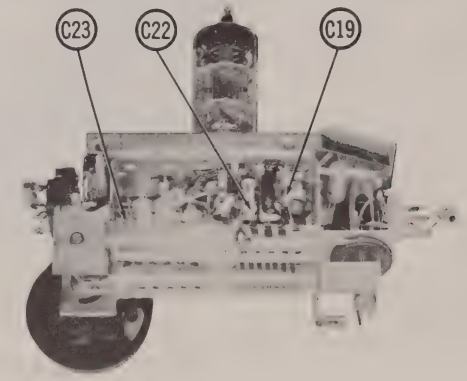
FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	10 N150 5%					*		10TCP-Q10
C6	10 N150 5%					*		10TCP-Q10
C7	39 N470 5%					*		
C8	39 N470 5%					*		
C9	330		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C10	11 N150 5%					*		10TCP-Q10
C11	20 N150 5%					*		10TCP-Q22
C12	.5-3.5							
C13	.5-3.5							
C14	.0022							
C15	20							
C16	.0027		SI 2700	D6-272	L10D27	CCD-272	B-227	10TS-D27
C17	7.5 N150 5%					*		
C18	7.5 N150 5%					*		
C19	12 N150 5%					*		10TCP-Q12
C20	.5-3.5							
C21	11 N150 5%					*		10TCP-Q10
C22	25 N150 5%					*		10TCP-Q27
C23	.0022							
C24	125 N750 5%			TCN-130	C10T13U	CCTN-121	CN7-312	10TCU-T12
C25	10 N150 5%					*		10TCP-Q10
C26	510		SI 500	D6-501	BYA10T5	CCD-501	GP350	10TS-T50
C27	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C28	15 N150					*		10TCP-Q15
C29	10-40							
C30	3-12							
C31	.0039		SI 4000	D6-402	L10D39	CCD-392	GP239	10TS-D39
C32	10-40							
C33	6-25							
C34	470 2.5%					VCM-20-471G	MCE244	
C35	47		SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C36	510 5%				5R5T51	CM-19B-511J		MS-351
C37	100							
C38	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	MCE245	5HK-D47
C39	1.5 P100			*		*		
C40	.0027		SI 2700	D6-272	L10D27	CCD-272	B-227	10TS-D27
C41	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C42	.015 400V		P488N-015	DD16-153	CUB6S15	4DP-1-153	GEM-415	4TM-S15
C43	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C44	.0027		SI 2700	D6-272	L10D27	CCD-472	B-227	10TS-D27
C45	1.5 N033					*		
C46	1 N075					*		
C47	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C48	82 N750 5%			TCN-82	C10Q82U		CN7-482	10TCU-Q82
C49	100 N750 5%			TCN-100	C10T1U		CN7-310	10TCU-T10
C50	.01 600V		P688N-01	D6-103	CUB611	6DP-2-103	GEM-611	6TM-S10

FM RF SUBCHASSIS







PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C51	.022 400V							
C52	.22 200V	Note 1	P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C53	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C54	51 NPO 5%			TCN-51	C10Q51U		CNO-450	
C55	.0047 600V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C56	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C57	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C58	.068 200V		P288N-068		CUB6S68	4DP-3-683	GEM-4168	4TM-S68

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Shielded Unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BLAUPUNKT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	1/2						Tone
B	1meg	1/2						Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	220K			
R3	18K 1W			
R4	150Ω			
R5	330K			
R6	1000Ω			
R7	470Ω			
R8	1meg			
R9	22K			
R10	1000Ω			
R11	47K			
R12	33K			
R13	220K			
R14	39Ω			
R15	100K			
R16	1000Ω			
R17	33K			
R18	220K			
R19	330K			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R20	1.8meg			
R21	47K			
R22	10meg			
R23	100K			
R24	220K			
R25	100K			
R26	1000Ω			
R27	1meg			
R28	1500Ω 3W	PW3-1500	3W-SQ-1500	
R29	220Ω			
R30	2700Ω			
R31	100Ω			
R32	220Ω			
R33	150Ω			
R34	2.2meg			
R35	470Ω			
R36	1.8meg			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BLAUPUNKT PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke						
L2	SW Ant.						
L3	460KC IF Trap						
L4	RF Choke						
L5	Loopstick						
L6	SW Osc.						
L7	BC Osc.						
L8	2nd FM IF						
L9	1st AM IF						
L10	Ratio Detector						
L11	2nd AM IF						
L12	Fil. Choke						
L13	Fil. Choke						
L14	Line Choke						
L15	Line Choke						

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BLAUPUNKT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .38A	200V @ .110A AC	6.3V @ 2A						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	BLAUPUNKT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6000Ω Tap @ 3%	3-4Ω						
		SEC. 2						
		15Ω						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BLAUPUNKT PART No.	QUAM PART No.	
SP1	4"x 6"	PM	3-4Ω	LA810/4Z	46A1	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	BLAUPUNKT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.060A	B250C75				

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BLAUPUNKT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	6/10A 250V			315.600 (3AG 6/10A 250V)		MDL 6/10	

MISCELLANEOUS

ITEM No.	PART NAME	BLAUPUNKT PART No.	NOTES
M3	FM Tuner		Complete
M4	Tuning Cap.		AM, 2 Gang
M5	Switch		Function Selector (Pushbutton Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

**DECCA MODEL
DP-285**

DECCA MODEL
DP-285

DECCA MODEL
DP-285

TRADE NAME	Decca Model DP-285
MANUFACTURER	Decca Distributing Corp., 445 Park Ave., New York 22, N. Y.
TYPE SET	AC Operated 5 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 58 Watts, .55 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR TELEFUNKEN TW-560 – PHOTOFACT SET 371 FOLDER 12 OR RECORD CHANGER MANUAL RC-10

SET 545 FOLDER 5

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7	V3	Channel 2 Output	25C5
V2	Channel 1 Output	25C5	V4	Channel 3 Output	25C5
			V5	Channel 3 Output	25C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	DECCA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.		
C1A	80	150	CE-150	PR4-295	BBRQ0789.5	WQ410	CDBQ-4422	TVA-4618		
B	40	150								
C	20	150								
D	20	150								

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C3	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C4	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C7	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C10	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DECCA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	3meg	½	VC-331				FA36T95	Loudness, Channel 1
	1meg Tap							
B	3meg	½					RU36T16	Loudness, Channel 2
	1meg Tap							
C	Shaft						CS3500	
R2A	500K	½	VC-270	B-60	AD47-500K-Z		FA55A	Treble, Channel 1
B	500K	½		SR-60	Not Req.		RU55A	Treble, Channel 2
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	3meg	½	VC-269	B-85			FC36A	Bass, Channel 1
B	3meg	½		SR-85			RU36A	Bass, Channel 2
C	Shaft			Not Req.			CS3500	
R4A	10meg	½	VC-330	B-98	A47-10meg-S	Q11-143	U82	Balance (Note 1)
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

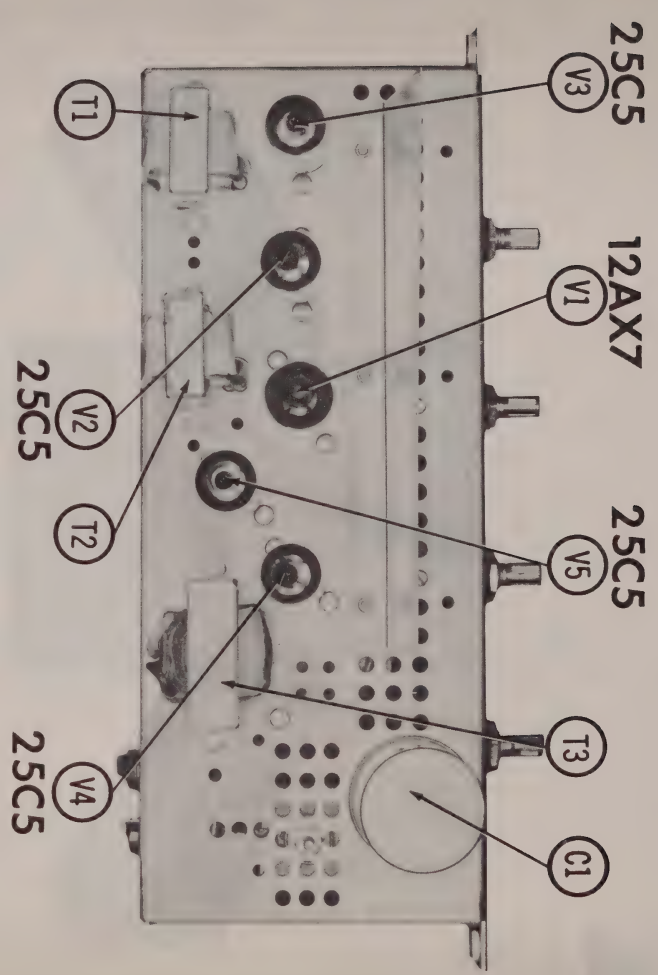
Note 1. Some versions may use 4meg in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	100K				R7	6.8meg			
R6	100K				R8	100K			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R9	100K				R16	47Ω 2W			
R10	82Ω 1W				R17	47Ω 2W			
R11	82Ω 1W				R18	50Ω 5W	PW5-50	5W-SQ-50	
R12	100Ω				R19	100K			
R13	100Ω				R20	100K			
R14	1000Ω 1W				R21	6.8meg			
R15	220Ω 5W	PW5-220	5W-SQ-220						

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	DECCA PART No.	REPLACEMENT DATA
K1	Audio Coupling	(2) 10000mmf, (2) 1000Ω, (2) 220K, (2) 470K		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DECCA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2900Ω	3-4Ω	TR-199	A-3025	A-3332	26S58	S-16Z	
T2	2900Ω	3-4Ω	TR-199	A-3025	A-3332	26S58	S-16Z	
T3	5400Ω CT	3-4Ω	TR-201	A-2900	A-3850	24S04	S-64X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DECCA PART No.	QUAM PART No.	
SP1	6"	PM	3-4Ω	SP-623	6A15	
SP2	4"x 6"	PM	3-4Ω	SP-416	46A07	
SP3	6"	PM	3-4Ω	SP-623	6A15	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	DECCA PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.120A	*	1N1763 ♦	250 *	SR200 ♦	* Selenium ♦ Silicon

PHONO CARTRIDGE & NEEDLES

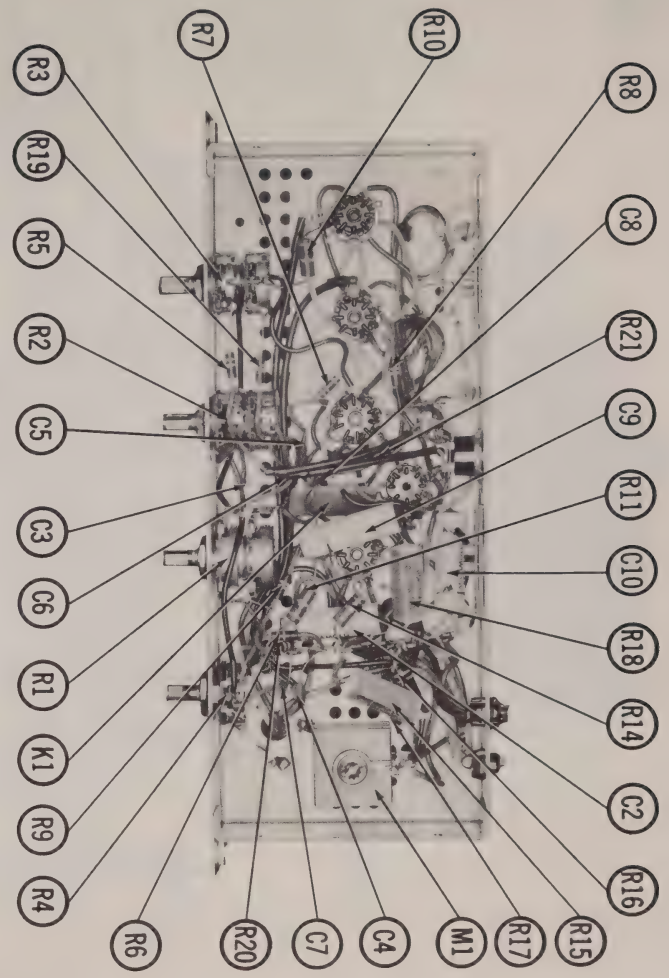
*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

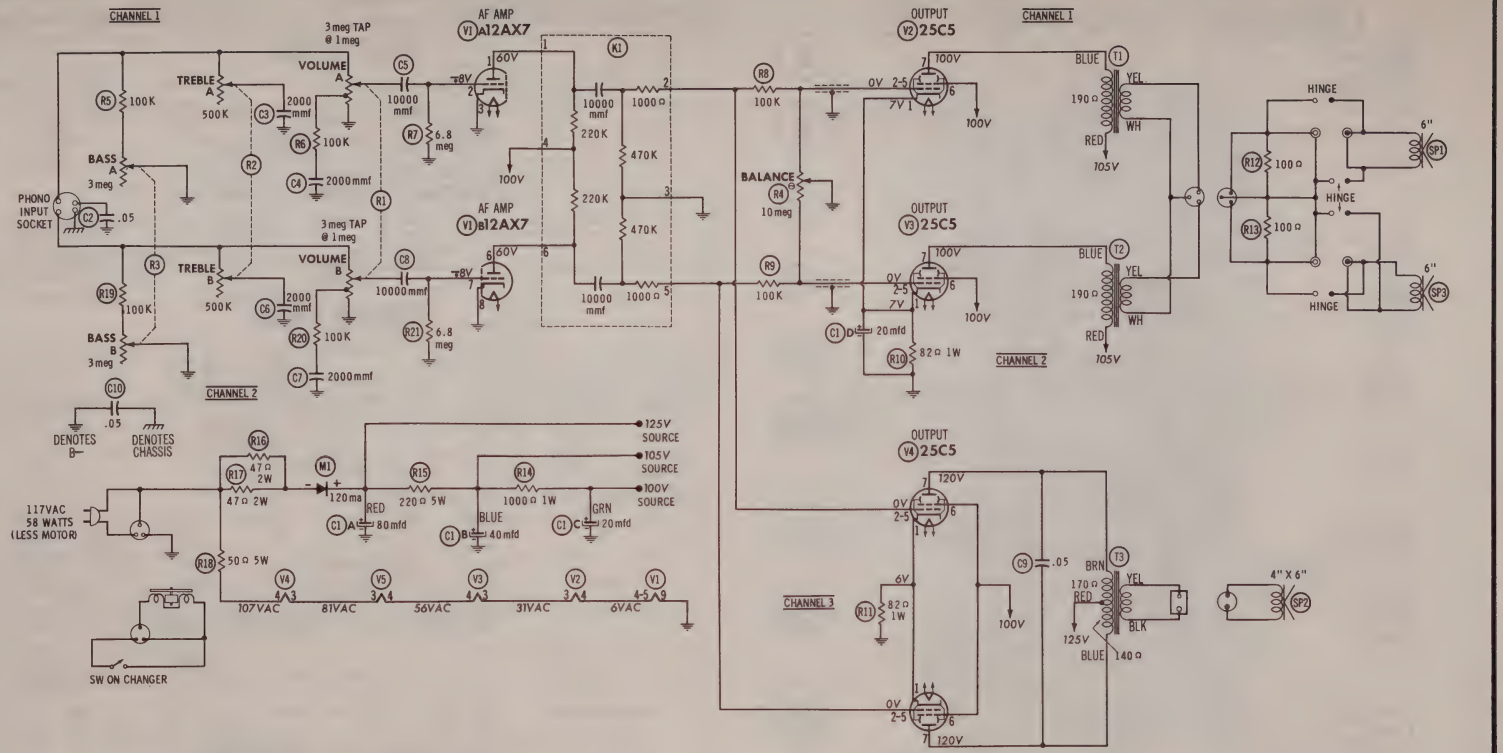
ITEM No.	REPLACEMENT DATA								NOTES
	DECCA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2									

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†220K	6.8meg	0Ω	5Ω	5Ω	†220K	6.8meg	0Ω	0Ω
V2	25C5	82Ω	NC	35Ω	5Ω	500K	†1200Ω	†310Ω		
V3	25C5	82Ω	500K	35Ω	65Ω	NC	†1200Ω	†310Ω		
V4	25C5	82Ω	400K	95Ω	140Ω	NC	†1200Ω	†170Ω		
V5	25C5	82Ω	400K	95Ω	65Ω	400K	†1200Ω	†140Ω		

RESISTANCE READINGS

† MEASURED FROM OUTPUT OF M1. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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DECCA MODEL DP-285

PHOTOFACT® Folder

GLOBE MODEL CB-200

TRADE NAME	Globe Model CB-200
MANUFACTURER	Globe Electronics, A Div. of Textron Electronics, Inc., Council Bluffs, Iowa
TYPE SET	AC-Battery Operated 10 Tube Crystal Controlled Citizens Band Transmitter-Receiver
POWER SUPPLY	110 -120 Volts AC, 60 Cycles (or) 12 Volt Storage Battery 110 -120 Volts AC, 60 Cycles (or) 6 Volt Storage Battery
RATING	63 Watts, .7 Amp. @ 117 Volts AC (Transmit) 58 Watts, .65 Amp. @ 117 Volts AC (Receiver) 4.6 Amp. @ 12.6 Volts DC 9.2 Amp. @ 6.3 Volts DC
TUNING RANGE	TRANSMITTER--Any 5 of Citizen Band Channels 1 thru 22 RECEIVER -- Crystal controlled for any 4 Bands. "T" position of Band Switch permits continuous tuning over entire Citizens Band range.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Suggested Alignment Tools:
A1 thru A6..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A7 thru A11.....GENERAL CEMENT #8721, 8722
WALSCO #2519
A13, A14.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

RECEIVER

1. Connect the high side of signal generator (tuned to 1680KC unmod.) thru .001mfd to pin 2 (grid) of Mixer, low side to chassis. Connect DC probe of VTVM to point (A) (AVC), common to chassis. Adjust A1, A2, A3, A4, A5 and A6 for maximum deflection. Remove test equipment.
2. Connect DC probe of VTVM to pin 9 (grid) of receiver oscillator, common to chassis. Adjust A7 from maximum inductance toward minimum inductance until oscillator operates. Disconnect VTVM and tune in the oscillator signal on an accurate receiver. The signal will appear 1680KC above the frequency of the channel in use. If not, readjust A7. If several channels are to be used, an average adjustment of A7 may be necessary to keep within operating frequency limits (± 1KC).
3. Connect DC probe of VTVM to point (A), common to chassis. Adjust the signal generator to channel 11 (27.085MC) and couple the signal to the antenna input. A direct connection may not be necessary unless the generator output is very low. Adjust A8 and A9 for maximum output.
4. Adjust signal generator to channel 11 (27.085MC) and couple the signal to the antenna input. A direct connection may not be necessary unless the generator output is very low. Set the channel selector to the fifth position (T). The tuning window lamp will come on. Set logging dial to one mark past 4. Adjust A10 for maximum output.

TRANSMITTER

1. Connect DC probe of VTVM thru an RF choke to pin 7 (grid) of Buffer, common to chassis. Set A11 for minimum inductance. Press mic button and adjust A11 until oscillations begin. Continue adjusting for a meter reading of approximately -40V. Press and release button several times, making certain that the oscillator operates each time. If erratic operation is encountered, increase inductance of A11, maintaining a meter reading of -35 to -40V. Check transmitter frequency.
2. Connect DC probe of VTVM to pin 1 (grid) of Final Amp. Adjust A12 for maximum deflection. The VTVM should indicate no less than 8 volts.
3. Set A13 near maximum capacity. Using an output indicator, alternately adjust A13 and A14 for maximum output.
4. Install unit in cabinet and readjust A13 and A14 for maximum output. A13 is reached thru the front hole on the left side of the cabinet, -- A14 thru the rear hole.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KZ667

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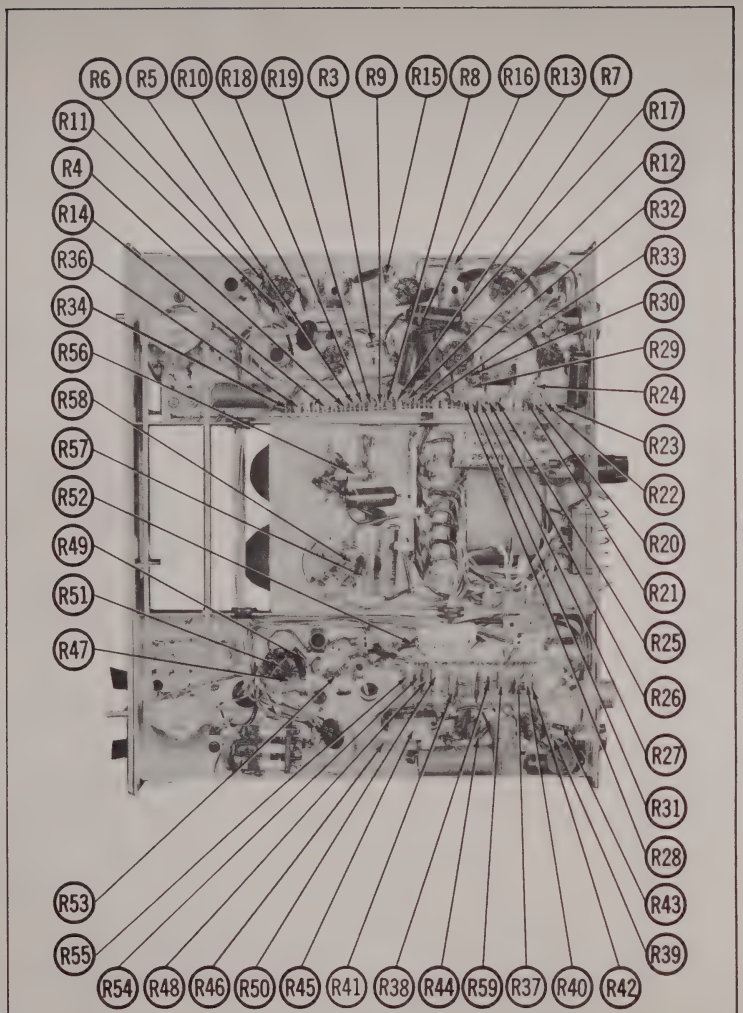
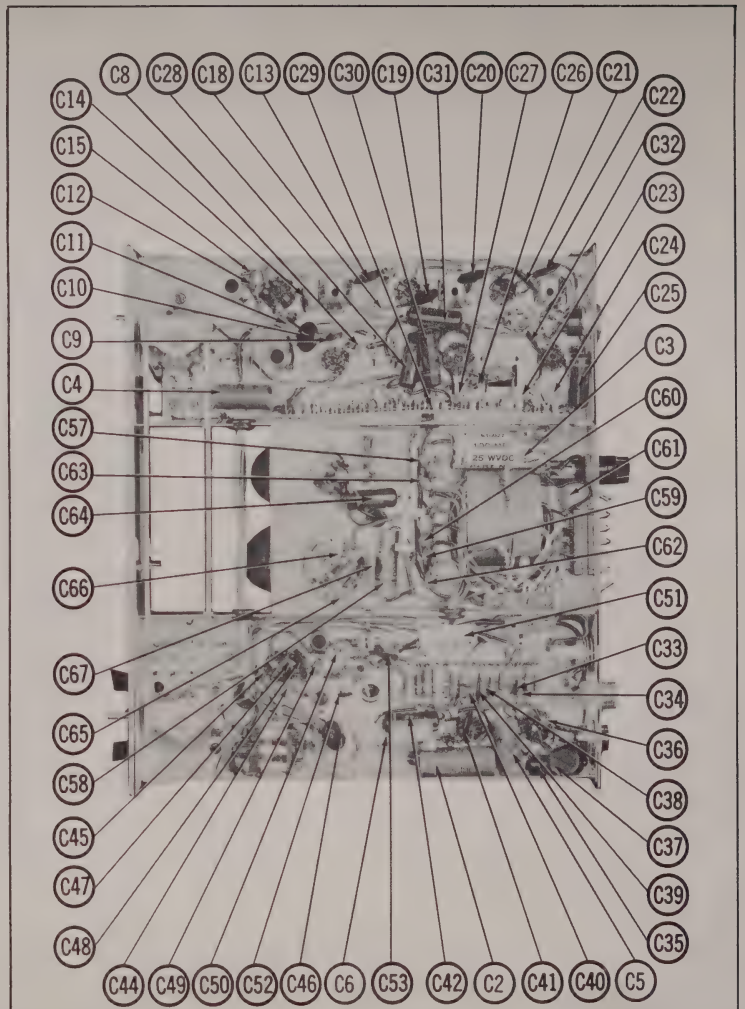
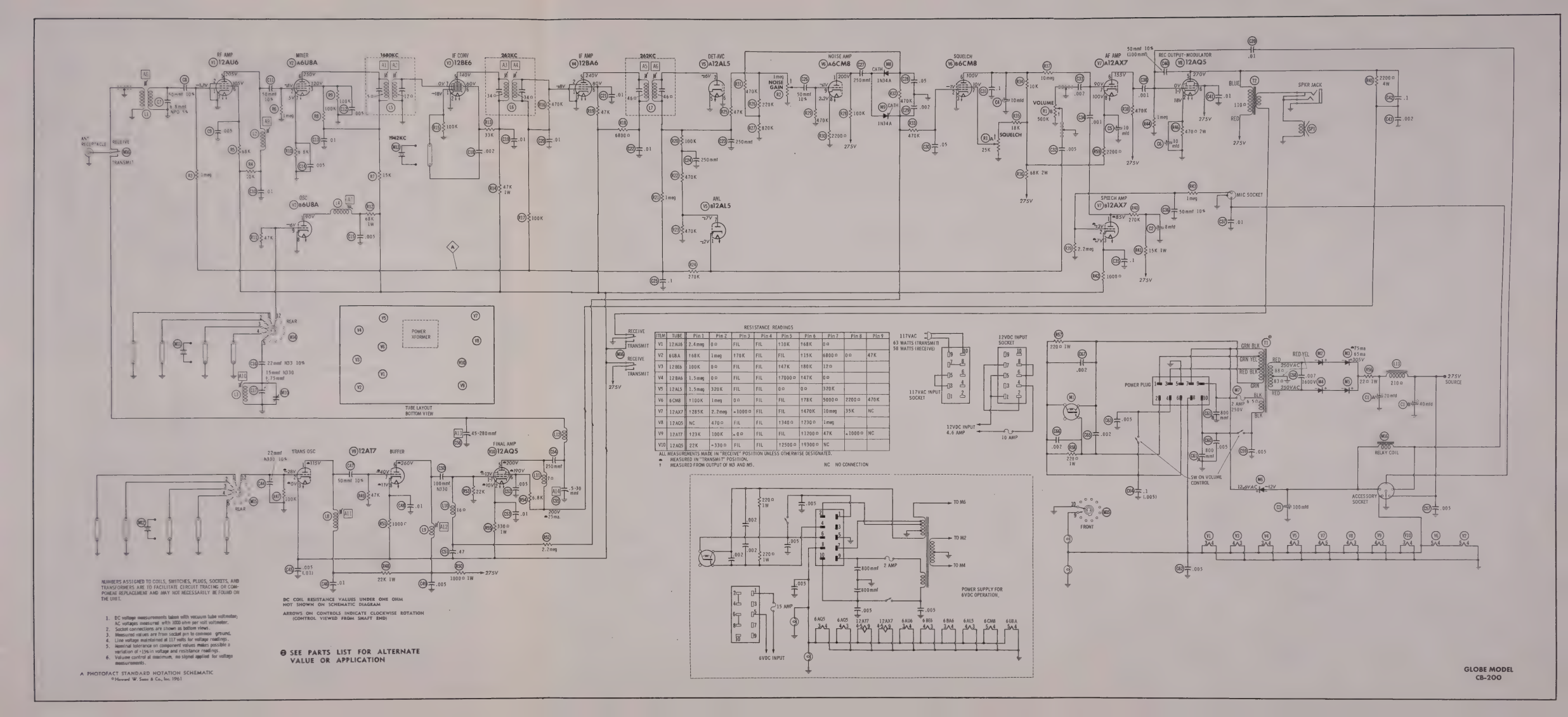
GLOBE MODEL CB-200
GLOBE MODEL CB-200
SET 545 FOLDER 6



CHASSIS BOTTOM VIEW-RESISTOR IDENT.



CHASSIS BOTTOM VIEW-CAPACITOR IDENT.



ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AU6	2.4meg	0Ω	FIL	FIL	†10K	†68K	0Ω		
V2	6U8A	†68K	1meg	†70K	FIL	FIL	†15K	6800Ω	0Ω	47K
V3	12BE6	100K	0Ω	FIL	FIL	†47K	†80K	12Ω		
V4	12BA6	1.5meg	0Ω	FIL	FIL	†7000Ω	†47K	0Ω		
V5	12AL5	1.5meg	320K	FIL	FIL	0Ω	0Ω	320K		
V6	6CM8	†100K	1meg	0Ω	FIL	FIL	†78K	5000Ω	2200Ω	470K
V7	12AX7	†285K	2.2meg	≈1000Ω	FIL	FIL	†470K	10meg	35K	NC
V8	12AT7	†23K	100K	≈0Ω	FIL	FIL	†340Ω	†230Ω	1meg	
V9	12AT7	†23K	100K	≈0Ω	FIL	FIL	†1200Ω	47K	≈1000Ω	NC
V10	12AQ5	22K	≈330Ω	FIL	FIL	†2500Ω	†9300Ω	NC		

ALL MEASUREMENTS MADE IN "RECEIVE" POSITION UNLESS OTHERWISE DESIGNATED.
≈ MEASURED IN "TRANSMIT" POSITION.
† MEASURED FROM OUTPUT OF M3 AND M5.
NC NO CONNECTION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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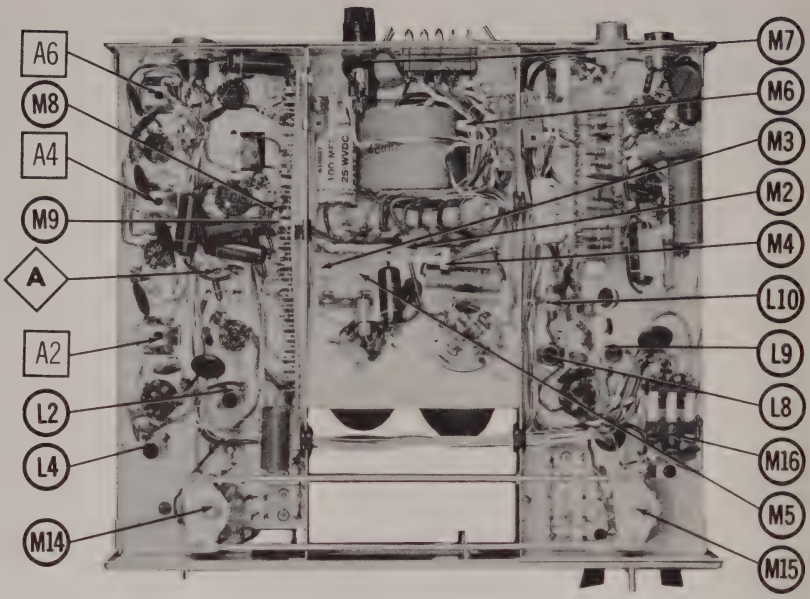
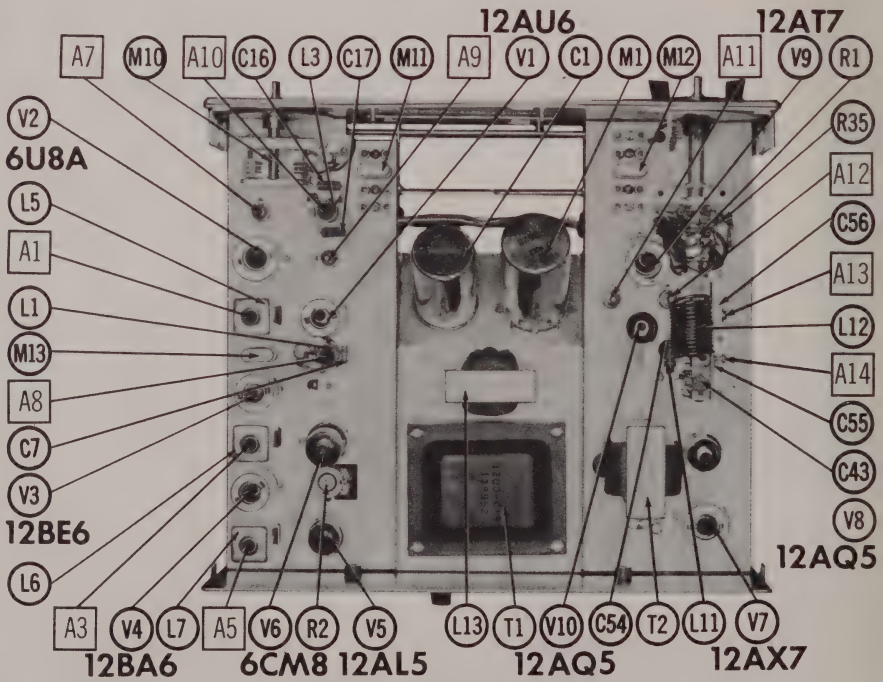
GLOBE MODEL CB-200



CHASSIS BOTTOM VIEW-ALIGN., INDUCTOR & MISC. IDENT.



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	RF Amplifier	12AU6
V2	Mixer-Osc.	6U8A
V3	2nd IF Converter	12BE6
V4	IF Amplifier	12BA6
V5	Det. -AVC-ANL.	12AL5
V6	Noise Amp. -Squelch	6CM8
V7	AF Amp. -Speech Amp.	12AX7
V8	Rec. Output-Modulator	12AQ5
V9	Trans. Osc. -Buffer	12AT7
V10	Final Amp.	12AQ5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	GLOBE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲20	450	1106-020	AFH2-56	B0440	FP345.3	TMD-2645	TVL-2762	
B	▲40	450							
C2	8	350	1106-030	PRS1610	BR835	TC61	TD-8-350	TVA-1603	
C3	100	25	1106-019	PRS1270	BBR100-25	TC2501	TD-100-25	TVA-1207	
C4	10	150	1106-034	PRS1410	BBR10-150	TC42	TD-10-150	TVA-1406	
C5	10	150	1106-034	PRS1410	BBR10-150	TC42	TD-10-150	TVA-1406	
C6	10	25	1106-032	PRS1250	BBR10-25	TC22	TD-10-25	TVA-1204	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	6.8 NPO 5%		NPO-SI 6.8	TCZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C8	50 10%		DI-50	DD-500	L10Q5	CCD-501	GP450	10TS-Q50
C9	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C10	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	50 10%		DI-50	DD-500	L10Q5	CCD-500	GP450	10TS-Q50
C12	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C15	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C16	22 N330 10%			TCA-22		*		10TCS-Q33
C17	15 N330 ± .75mmf			TCA-15		*		10TCS-Q15
C18	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C19	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	250		SI 250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C24	250		SI 250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C25	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C26	50 10%		DI-50	DD-503	L10Q5	CCD-500	GP450	10TS-Q50
C27	250		SI 250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C28	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C29	.002		BPD-005	DD-202	BYA10D5	CCD-202	B-220	5HK-D20
C30	.05 200V		P288N-05	DD-502	CUB2S5	4DP-3-503	GEM-215	2TM-S50
C31	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-D10
C32	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C33	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C34	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C35	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C36	50 10%		DI-50	DD-500	L10Q5	CCD-500	GP450	10TS-Q50
C37	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C39	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	50 10%	(100) †	DI-50	DD-500	L10Q5	CCD-500	GP450	10TS-Q50
C41	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C42	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C43	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C44	22 N330 10%			TCA-33		*		10TCS-Q22
C45	.005	(.01) †	BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C46	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C47	50 10%		DI-50	DD-500	L10Q5	CCD-500	GP450	10TS-Q50

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C48	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C49	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C50	100 N330			TCA-100		*		10TCS-T10
C51	.47 100V		P288N-47		CUB2P47	1DP-4-474	GEM-2047	2TM-P47
C52	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C53	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C54	250		SI 250	D6-251	L10T25	CCD-251	B-250	10TS-T25
C55	.5-30	#1111-005						
C56	45-280	#1111-004				464		
C57	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C58	.007 1600V		P1684CM-007	DD16-007	CUB16D7	16DP-3-702	GEM-1627	MB-D7
C59	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C60	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C61A	800		BPD-0008	DD-801	L10T8	CCD-821	B-382	10TS-T80
B	800		BPD-0008	DD-801	L10T8	CCD-821	B-382	10TS-T80
C62	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C63	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C64	.1 200V	(.005) †	P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C65	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C66	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C67	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

† Alternate Value.

Globe Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	GLOBE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	25K	1/3	2300-019	F1-27		† QJ-1543R	■ UE4219-S	Squelch
B	500K	1/3		R2-41				Volume
C	Switch			KR-2				Power Off-On
R2	1meg	1/4	2300-021					Noise Gain

† "CONCENTRIKIT" Equivalent: K-6 Kit with Base Elements and Shafts: B11-120, P13-214 (Panel)
(Not available as a factory assembled unit). B13-133, R1-223 (Rear)
76-2 (Switch)

■ "STA-LOC" Equivalent: FA253L, RU55A, OS2437, IS2812, US42.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	1meg			
R4	10K			
R5	68K			
R6	1meg			
R7	15K			
R8	100K			
R9	100K			
R10	6800Ω			
R11	47K			
R12	68K 1W			
R13	33K			
R14	47K 1W			
R15	100K			
R16	470K			
R17	100K			
R18	6800Ω			
R19	47K			
R20	100K			
R21	1meg			
R22	470K			

ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS
R23	470K			
R24	270K			
R25	47K			
R26	220K			
R27	820K			
R28	100K			
R29	470K			
R30	2200Ω			
R31	470K			
R32	470K			
R33	470K			
R34	10K			
R35	18K			
R36	68K 2W			
R37	10meg			
R38	470K			
R39	2.2meg			
R40	270K			
R41	15K 1W			
R42	1000Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R43	1meg				R52	2.2meg			
R44	1meg				R53	22K			
R45	2200Ω 4W	PW5-2200	5W-59-2200		R54	6800Ω			
R46	470Ω 2W				R55	330Ω 1W			
R47	100K				R56	22Ω 1W			
R48	22K 1W				R57	220Ω 1W			
R49	47K				R58	220Ω 1W			
R50	1000Ω 1W				R59	2200Ω			
R51	1000Ω								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		GLOBE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Ant.	1400-128	TV-116	6250	RTC-8568	T232A	
L2	RF	1400-105	TV-112	6171-A	RTC-8609	T216	
L3	Osc.	1400-116	TV-112	6171-A	RTC-8609	T216	
L4	Osc. Plate	1400-103	TV-112	6171-A	RTC-8609	T216	
L5	1680KC IF	1205-001A					
L6	1st 262KC IF	1205-006	BC-350	12-H1	RTC-8638	T604	
L7	2nd 262KC IF	1205-007	BC-351	12-H2	RTC-8639	T605	
L8	Osc. Plate	1400-117					
L9	Buffer Plate	1400-119	TV-112	6171-A	RTC-8609	T216	
L10	RF Choke(750uh)	1301-006	TV-206	6148	RTC-8583	T327	
L11	RF Choke (120uh)	1301-025	TV-195	6153	RTC-8585	T307	
L12	Final Plate	1400-129					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ∿	GLOBE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L13	.075A	210Ω	3.5HY	1300-017					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	AC OPERATION			GLOBE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC. 1	SEC. 2						
T1	117V @ .7A	500VCT @ .075A DC	12.6V @ 1.6A	1200018①					① Part #1200-019 used for 6V DC Operation.
	DC OPERATION								
	12.6VCT @ 3A	500VCT @ .075A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	GLOBE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5800Ω	3-4Ω	1203-014				S-5Z	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	GLOBE PART No.	QUAM PART No.	
SP1	3"x 5"	PM	3-4Ω	4002-006	35A05	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				GLOBE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12.6	115v	4001-001	6301	G1601	6301	12V Versions
	Interrupter	6.3	115v	4001-002	5301	1601	5301	6V Versions

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	GLOBE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M2	.075A	3700-061	1N1763	F4	SR500	
M3	.075A	3700-061	1N1763	F4	SR500	
M4	.075A	3700-061	1N1763	F4	SR500	
M5	.075A	3700-061	1N1763	F4	SR500	
M6	.100A	3700-014	1N1763	2F4	SR200	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			GLOBE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M7	3AG	2A 250V 10A 15A	1500-011 1500-009① 1500-012②		312002 (3AG 2A 250V)	342001	AGC 2	HKP

① Part of 12.6V Input Cable. ② Part of 6.3V Input Cable.

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		GLOBE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M8	1N34A	3700-002		1N34A	1N34A	Squelch Rectifier
M9	1N34A	3700-002		1N34A	1N34A	Squelch Rectifier

MISCELLANEOUS

ITEM No.	PART NAME	GLOBE PART No.	NOTES
M10	Variable Cap.	1105-031	1 Gang, Receiver Tuning
M11	Crystal	Specify Channel	Receiver
M12	Crystal	Specify Channel	Transmit
M13	Crystal		1942 KC
M14	Switch	2100-034	Receiver Channel
M15	Switch	2100-034	Transmit Channel
M16	Relay	3500-015	Transmit-Receive
M17	Microphone	4000-008	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	2600-021	Tuning
Knob	2600-024	Channel Selector
Knob	2600-022	Volume
Knob	2600-023	Squelch
Cabinet	1700-034	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

GOLDEN SHIELD MODEL 6002-1

GOLDEN SHIELD
MODEL 6002-1

GOLDEN SHIELD
MODEL 6002-1

TRADE NAME	Golden Shield Model 6002-1 (Ch. 629-3)
SUPPLIER	Golden Shield Corp., Service Dept., 700 Ellicott Street, Batavia, N. Y.
TYPE SET	AC Operated 4 Tube AM Receiver With Electric Clock
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 30 Watts, .29 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	540 – 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2.....GENERAL CEMENT #5097, 8727
WALSCO #2515
A3, A4.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 1 (grid) of Converter. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	$A1_2A2$	Adjust for maximum output.
2.	Loop	1600KC	1600KC	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	1400KC Signal	"	A4	"

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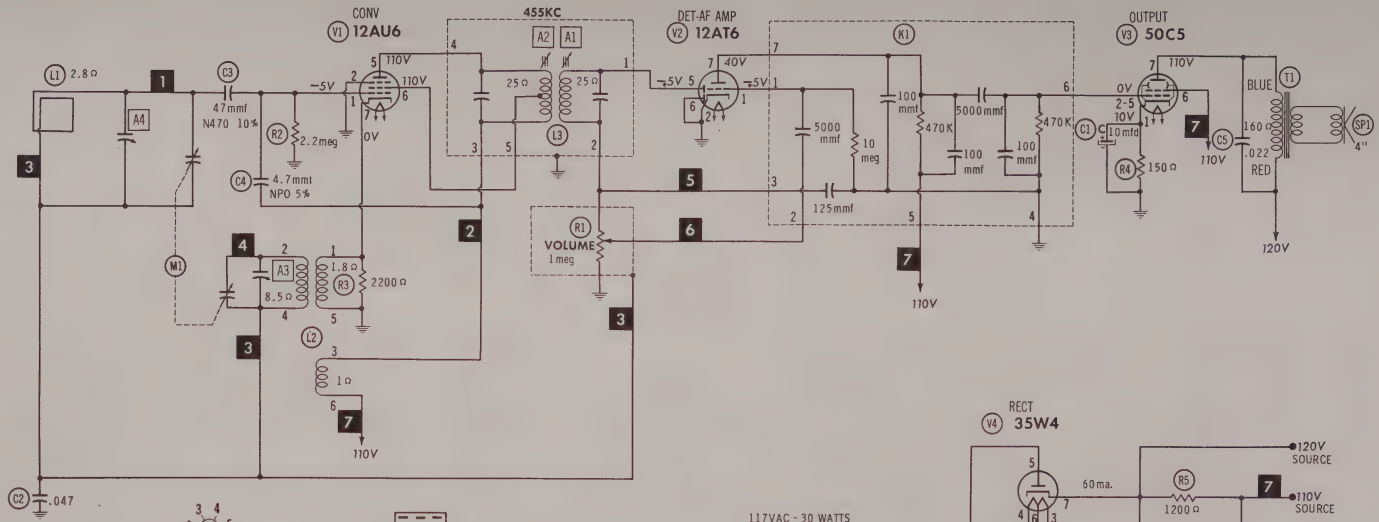
KG645

SET 545 FOLDER 7



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AU6	2.2meg	0Ω	30Ω	15Ω	†1200Ω	†1200Ω	1.8Ω
V2	12AT6	10meg	0Ω	15Ω	0Ω	1meg	0Ω	†470K
V3	50C5	150Ω	NC	63Ω	120Ω	470K	†1200Ω	†160Ω
V4	35W4	NC	TP	120Ω	155Ω	155Ω	150Ω	¶ INF

¶ THIS READING WILL VARY DEPENDING ON THE CONDITION OF THE ELECTROLYTIC.
† MEASURED FROM PIN 7 OF V4.
NC NO CONNECTION.
TP TIE POINT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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GOLDEN SHIELD
MODEL 6002-1

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12AU6	V3	Output	50C5
V2	Det. -AF Amplifier	12AT6	V4	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Golden Shield PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■70	150		PWH3-81-50	C0110 †	PFP311.12	TMT-3148 ǂ	PCL-3431.1	
B	▲30	150							
C	10	25							

† Use printed circuit adapters #55277 & 55278.
ǂ Use printed circuit adapter kit TMA.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C3	47 N470 10%					*		
C4	4.7 NPO 5%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C5	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C6	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Golden Shield PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	1meg	½	37-86497-17				P2-16A	Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	2.2meg				R5	1200Ω			
R3	2200Ω				R6	33Ω 2W			
R4	150Ω								

PRINTED BOARD

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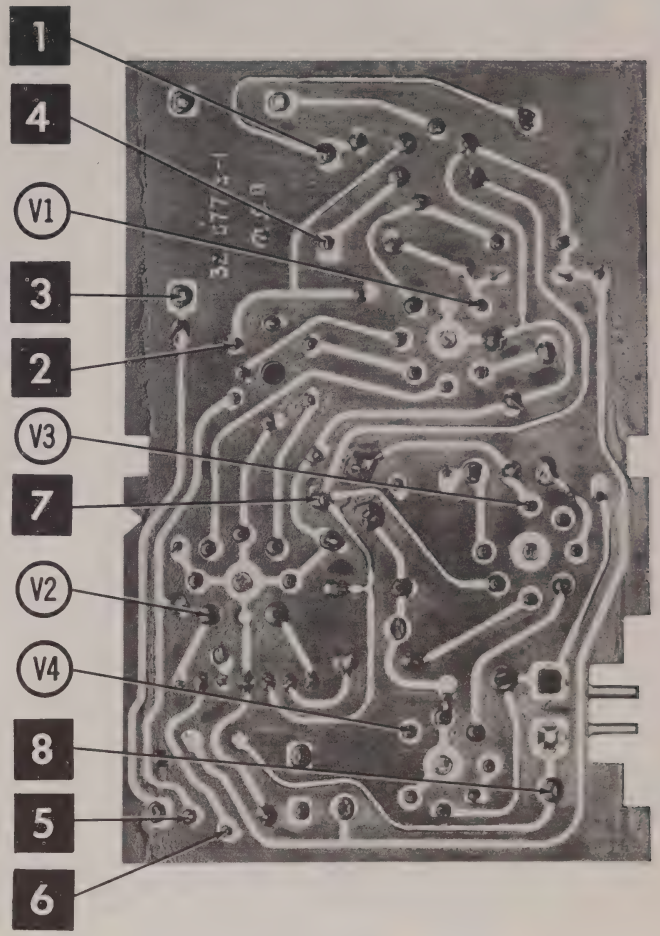
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



GOLDEN SHIELD
MODEL 6002-1

FOLDER 7

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Golden Shield PART No.	REPLACEMENT DATA
K1	Audio Coupling	(3) 100mmf, 125mmf, (2) 5000mmf, (2) 470K, 10meg		Centralab PC-390

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Golden Shield PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1 L2 L3	Loop Ant. Osc. IF						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Golden Shield PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2200Ω	3-4Ω	(12-87726-4)	A-3025	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Golden Shield PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	(12-87726-4)	4A07	

MISCELLANEOUS

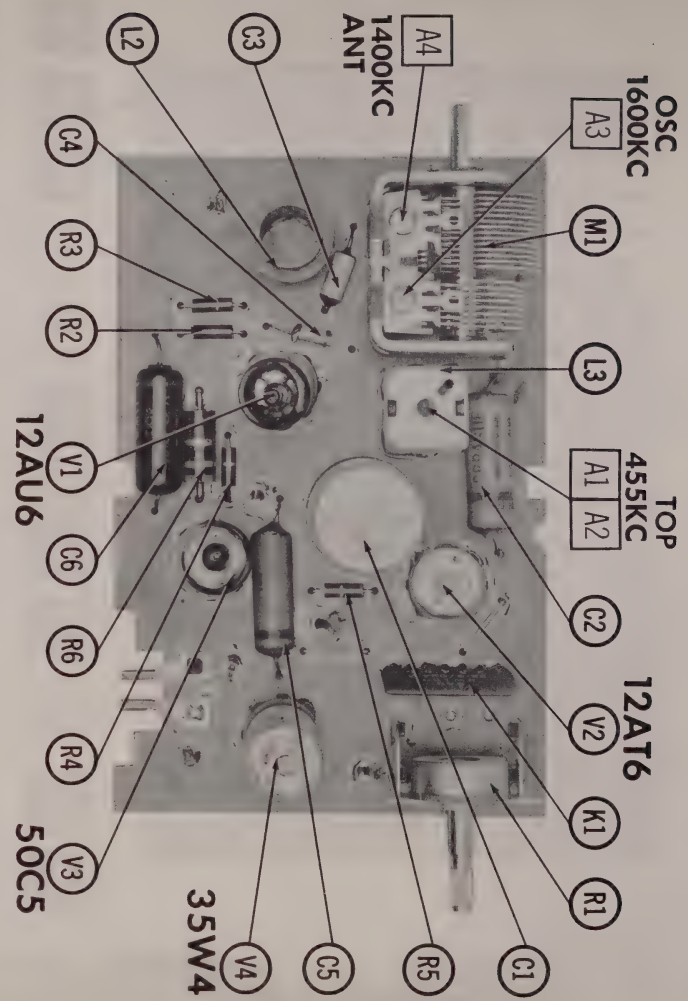
ITEM No.	PART NAME	Golden Shield PART No.	NOTES
M1 M2	Tuning Cap. Clock Ass'y.		2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



PHOTOFACT® Folder

GRUNDIG MAJESTIC MODELS SO111US, SO112US, SO121PX, SO121US, SO122US, SO142PX, SO142US

GRUNDIG MAJESTIC MODELS SO111US, SO112US, SO121PX, SO121US, SO122US, SO142PX, SO142US

MODEL SO122US

GRUNDIG MAJESTIC MODELS SO111US, SO112US, SO121PX, SO121US, SO122US, SO142PX, SO142US

TRADE NAME	Grundig Majestic Models SO111US, SO112US, SO121PX, SO121US, SO122US, SO142PX, SO142US		
IMPORTER	Majestic International Sales, 743 N. LaSalle Street, Chicago 10, Illinois		
TYPE SET	AC Operated 9 Tube FM-BC-SW Receiver With 4 Speed Automatic Record Changer		
POWER SUPPLY	110 — 125 Volts AC, 60 Cycles	RATING	75 Watts, .7 Amp. @117 Volts AC (Less Motor)
TUNING RANGE	BROADCAST 510—1620KC FREQ. MOD. 88 — 108MC	SHORT WAVE	5.9 — 16MC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE TELEFUNKEN TW560 — PHOTOFACT SET 371 FOLDER 12
OR RECORD CHANGER MANUAL RC-10

SET 545 FOLDER 8

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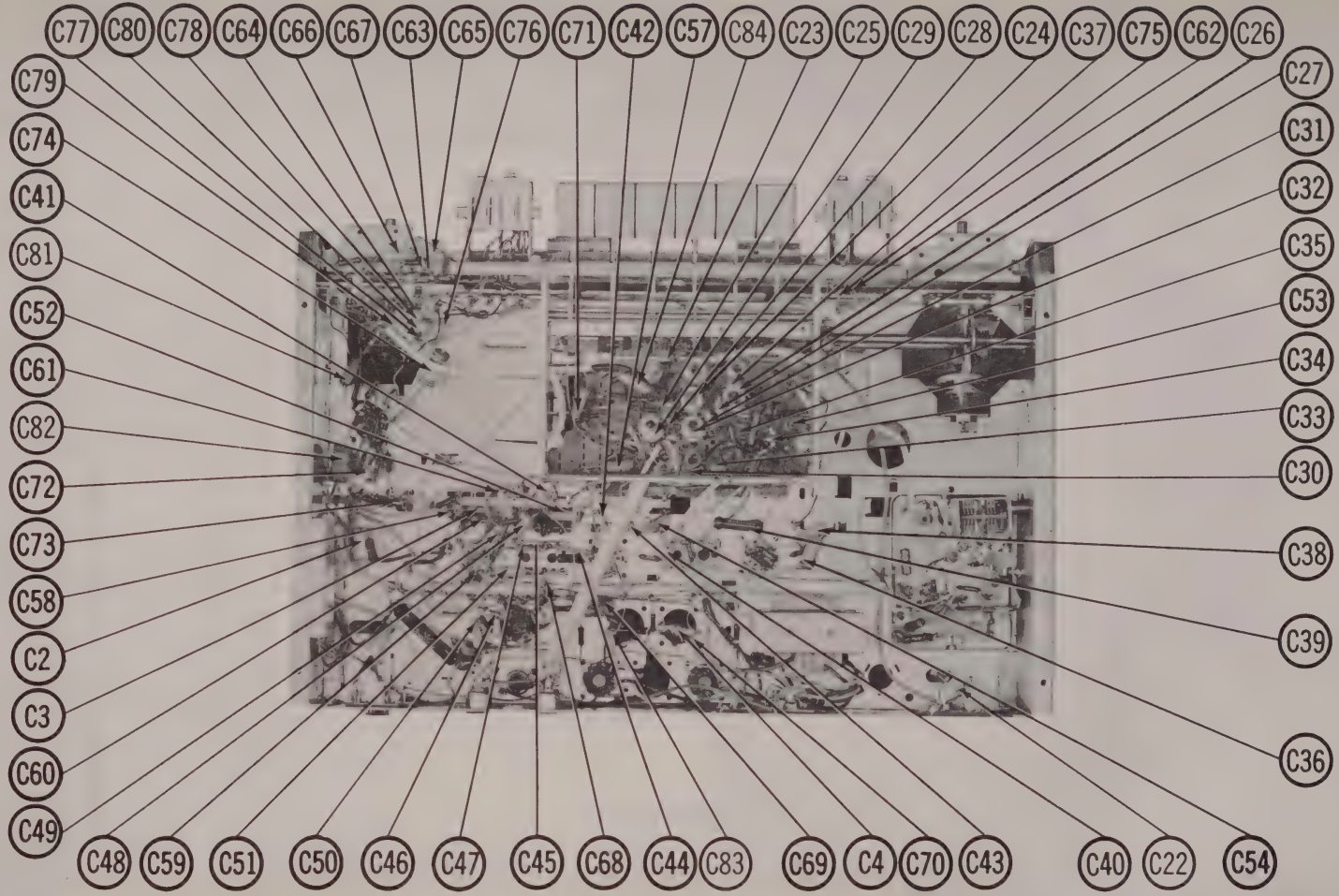
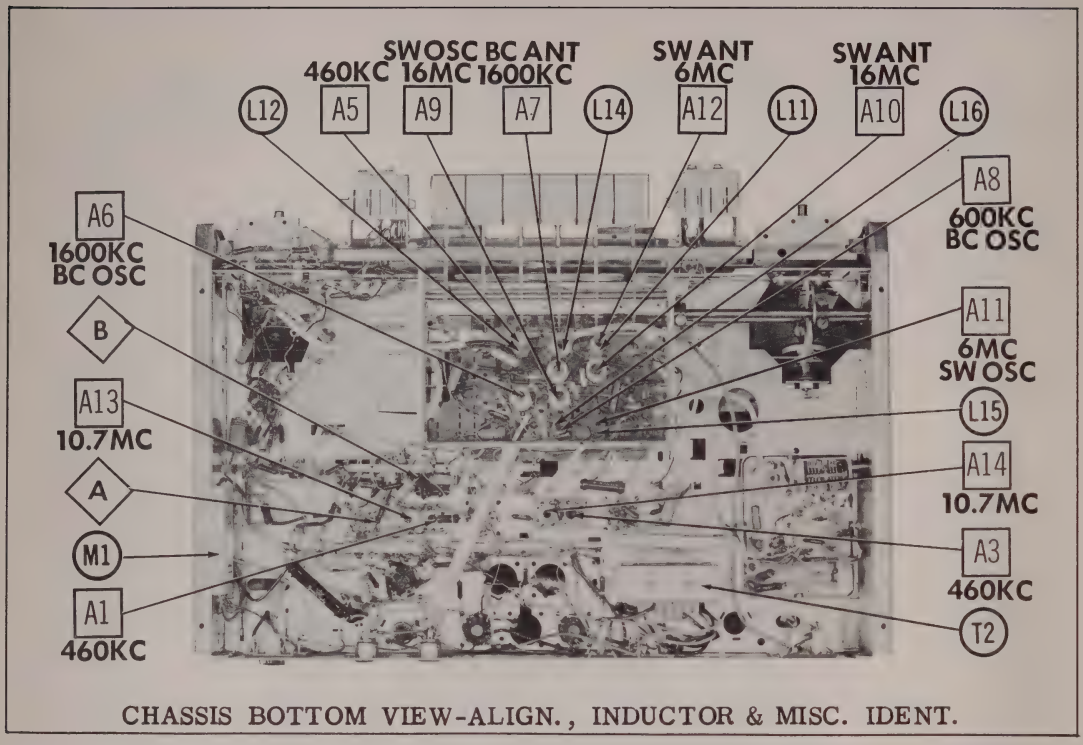
KN681

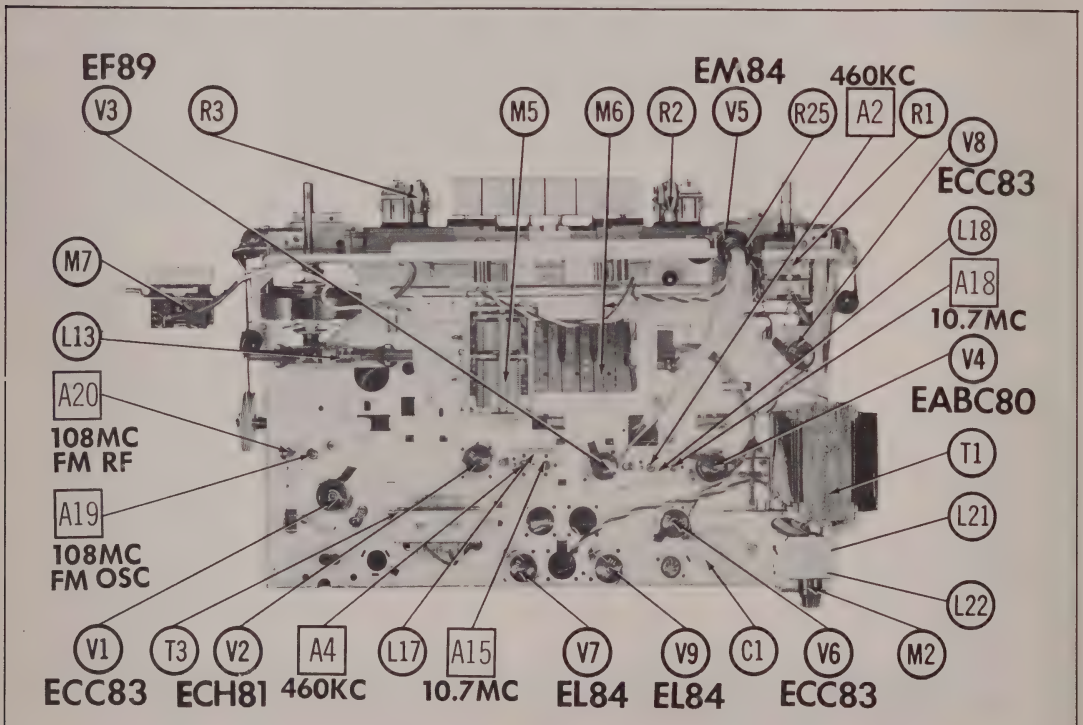


CHASSIS BOTTOM VIEW-CAPACITOR IDENT.

CHASSIS BOTTOM VIEW-RESISTOR IDENT.



CHASSIS BOTTOM VIEW-ALIGN., INDUCTOR & MISC. IDENT.



CHASSIS-TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4, A13, A14, A15, A17... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A18, A19..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 2 (grid) of AM Converter. Low side to chassis.	460KC (400~ 30% AM)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru 200mmf to AM antenna terminal. Low side to chassis.	"	"	"	A5	Adjust for MINIMUM output.
3.	"	1600KC	1600KC	"	A6, A7	Adjust for maximum output.
4.	"	600KC	600KC	"	A8	"
5.	"	16MC	(SW) 16MC	"	A9, A10	"
6.	"	6MC	6MC	"	A11, A12	Adjust for maximum output. Repeat Steps 2 thru 6.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals.	10.7MC	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A13, A14, A15, A16, A17	Adjust for maximum deflection.
8.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	Across FM antenna terminals.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A13, A14, A15, A16, A17	Disconnect stabilizing capacitor C3. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C3.
8.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A18	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A13 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	Across FM antenna terminals with 150Ω in each lead.	108MC (Unmod.)	(FM) 108MC	DC probe to point Ⓐ. Common to chassis.	A19, A20	Adjust for maximum deflection.
10.	"	88MC	88MC	"	A21, A22	"

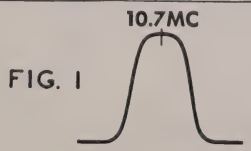


FIG. 1

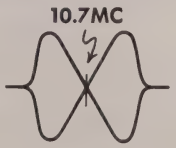
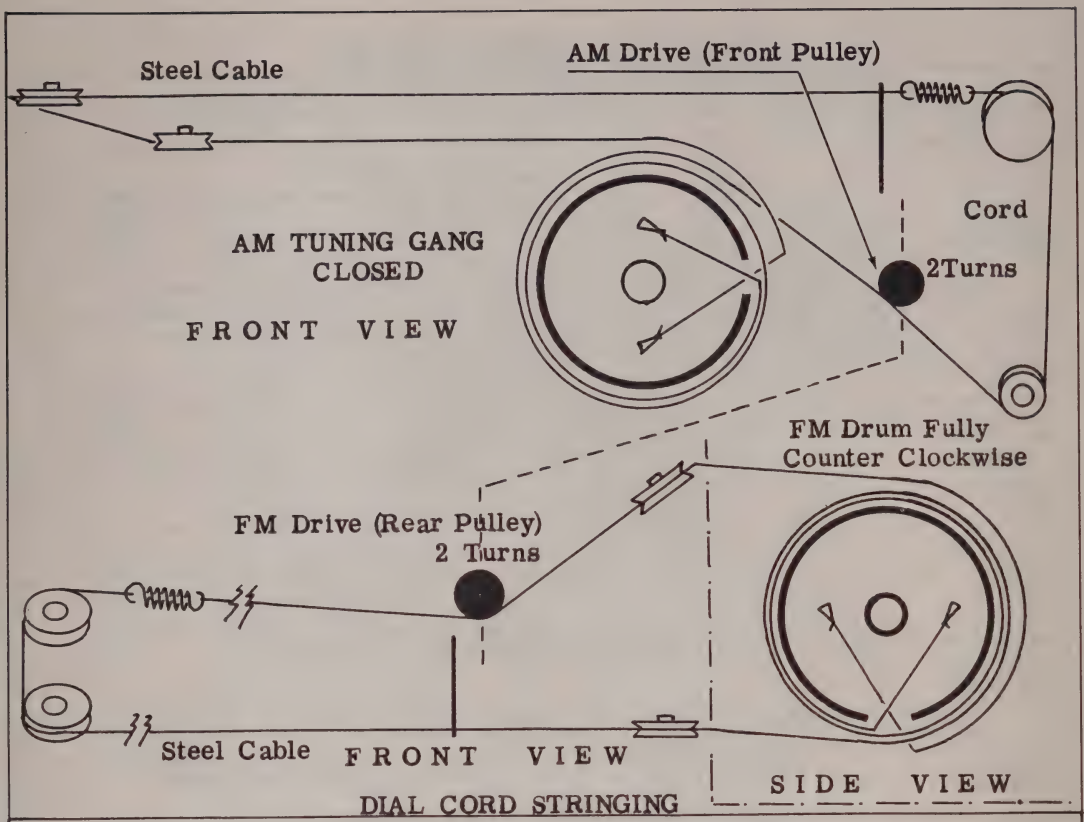
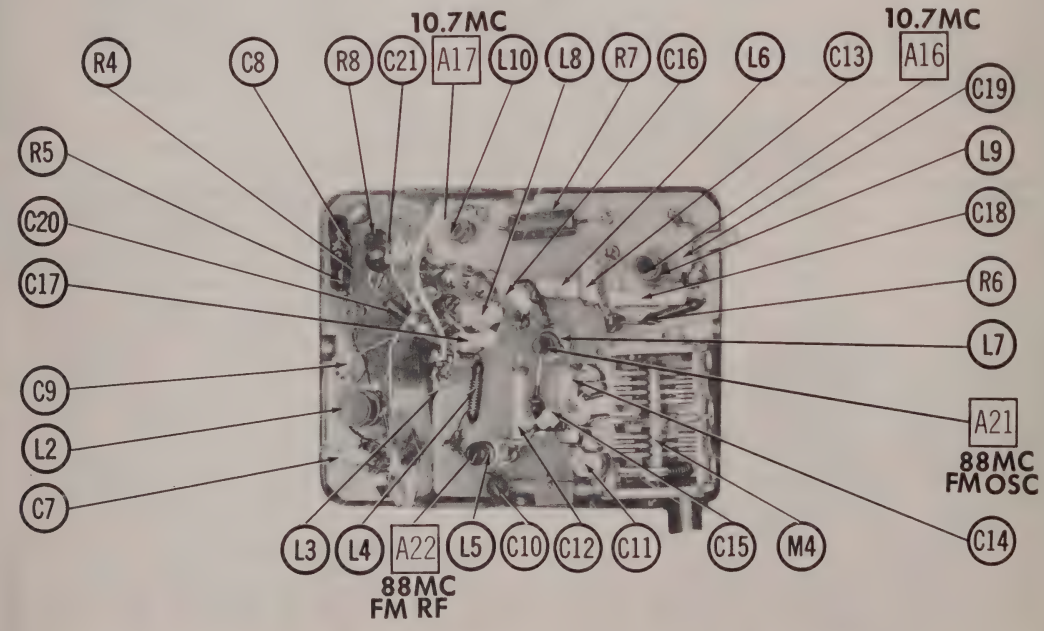


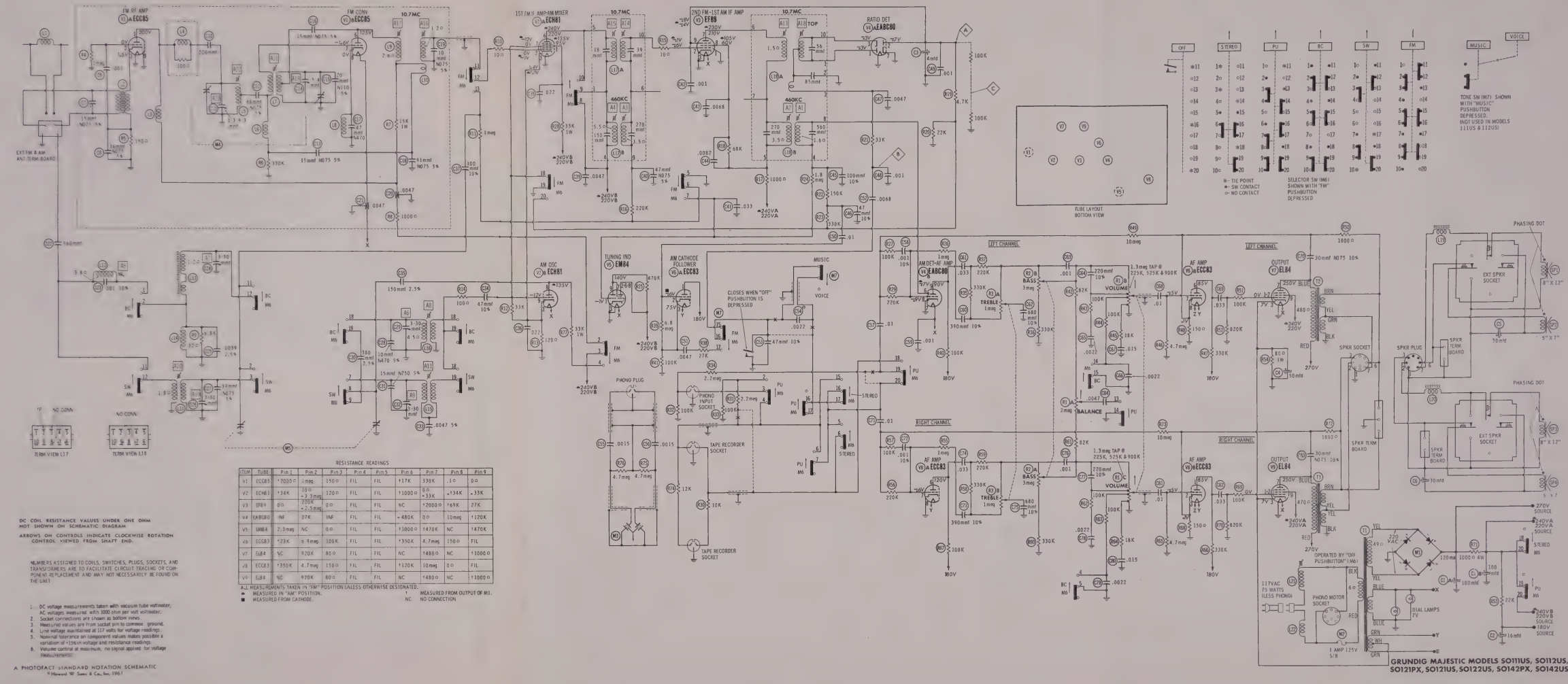
FIG. 2



DIAL CORD STRINGING



FM RF SUBCHASSIS-BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	*2000Ω	1meg	150Ω	FIL	FIL	*17K	330K	.1Ω	0Ω
V2	ECH81	*34K	10Ω *3.3meg	120Ω	FIL	FIL	†1000Ω	0Ω *33K	*34K	*33K
V3	EF89	0Ω	220K *2.5meg	0Ω	FIL	FIL	NC	†2000Ω	*69K	27K
V4	EABC80	INF	27K	INF	FIL	FIL	*480K	0Ω	10meg	†120K
V5	EA86	2.3meg	NC	0Ω	FIL	FIL	†1000Ω	†470K	NC	†470K
V6	ECC83	*23K	6.9meg	100K	FIL	FIL	*350K	4.7meg	150Ω	FIL
V7	EL84	NC	*20K	80Ω	FIL	FIL	NC	*480Ω	NC	†1000Ω
V8	ECC83	*350K	4.7meg	150Ω	FIL	FIL	*120K	10meg	0Ω	FIL
V9	EL84	NC	*20K	80Ω	FIL	FIL	NC	*480Ω	NC	†1000Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED IN "AM" POSITION.
■ MEASURED FROM CATHODE.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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GRUNDIG MAJESTIC MODELS SO111US, SO112US, SO121PX, SO121US, SO122US, SO142PX, SO142US

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	ECC85	V6	AM Cathode Follower-Left Channel AF Amp.	ECC83
V2	1st FM IF Amp. - AM Mixer AM Osc.	ECH81	V7	Left Channel Output	EL84
V3	2nd FM-1st AM IF Amp.	EF89	V8	Right Channel AF Amp.	ECC83
V4	Ratio Det. -AM Det. - Left Channel AF Amp.	EABC80	V9	Right Channel Output	EL84
V5	Tuning Indicator	EM84			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Grundig Majestic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	100	350		AFH2-41-50	B0332	FP227.7	TMD-2435	TVL-2641	
B	100	350							
C2	16	350		PRS1640	BR1635	TC64	TD-16-350	TVA-1607	
C3	4	70		SRE150V5	NLW5-100	TT80X4	MLV5-100	TE-1403	
C4	50	12		PTT59	NLW50-15	TT15X50	MLV50-12	TE-1133	
C5	30	35		PRS1460	BR3015	TC47	TD-30-150	TVA-1412	
C6	30	35		PRS1460	BR3015	TC47	TD-30-150	TVA-1412	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	15 N075 5%					*		
C8	36 N075 5%					*		
C9	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C10	220		DI-220	DD-220	L10T22	CCD-221	B-322	10TS-T22
C11	1.3-9.3							
C12	68 N075 5%					*		
C13	15 N075 5%					*		
C14	.5-4							
C15	20 N110 5%					*		
C16	15 N075 5%					*		
C17	47 N470					*		
C18	91 N075 5%					*		
C19	10 N075 5%					*		
C20	.0047							
C21	.0047							
C22	560		SI 560	D6-561	L10T56	CCD-561	GP356	10TS-T56
C23	.001 10%			DD-102	5R5D1	CCD-102	GP210	10TS-D10
C24	3-30							
C25	.0039 2.5%					CM-20E-392G	MCE462.5	
C26	3-30							
C27	39 N075 5%					*		
C28	10 N470 5%					*		
C29	3-30							
C30	380 2.5%					CM-20D-391G		
C31	15 N750 5%		N750-SI 15	TCN-15	C10Q15U	CCTN-150	CN7-415	10TCU-Q15
C32	3-30							
C33	.0047 5%				1R5D47	CM-20B-472J	MCJ464	MS-247
C34	47 10%		NPO-DI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C35	150 2.5%					CM-20C-151G	MCE236	

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C36	.022 250V		P488N-022	DD-203	CUB4S22	4DP-2-203	GEM-4122	4TM-S22
C37	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C38	.022 500V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C39	.0047 500V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C40	47 N075 5%						*	
C41	.033 250V		P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	6TM-S33
C42	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C43	.0068 500V		P688N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6268	6TM-D68
C44	.0082			DD-822	DPMS6D82	CCD-822	B-282	6TM-D80
C45	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C46	47 10%		NPO-SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C47	.0047		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C48	.001 500V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C49	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C50	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C51	.0047 500V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C52	.0068 500V		P688N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6268	6TM-D68
C53	47 10%		NPO-SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C54	.0022 500V	Note 1	P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C55	.0015 500V		P688N-0015	D6-152	CUB6D15	6DP-1-152	GEM-6215	6TM-D15
C56	.0015 500V		P688N-0015	D6-152	CUB6D15	6DP-1-152	GEM-6215	6TM-D15
C57	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C58	.001 10%			D6-102	5R5D1	CCD-102	GP210	10TS-D10
C59	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C60	390 10%			D6-391	L10T39	CCD-391	GP339	10TS-T39
C61	.033 500V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C62	680 10%			D6-681	5R5T68	CCD-681	GP368	10TS-T68
C63	.001 500V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C64	220 10%		NPO-SI 220	D6-221	L10T22	CCD-221	GP322	10TS-T22
C65	.0022 500V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C66	.0022 500V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C67	.015 250V		P488N-015	DD-153	CUB6S15	4DP-1-153	GEM-4115	4TM-S15
C68	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C69	.033 500V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C70	30 N075 10%						*	
C71	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C72	.001 10%			D6-102	5R5D1	CCD-102	GP210	10TS-D10
C73	390 10%			D6-391	L10T39	CCD-391	GP339	10TS-T39
C74	.033 500V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C75	680 10%			D6-681	5R5T68	CCD-681	GP368	10TS-T68
C76	.001 500V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C77	220 10%		NPO-SI 220	D6-221	L10T22	CCD-221	GP322	10TS-T22
C78	.0022 500V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C79	.0022 500V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C80	.015 250V		P488N-015	DD-153	CUB6S15	4DP-1-153	GEM-4115	4TM-S15
C81	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C82	.033 500V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-D33
C83	30 N075 10%						*	
C84	.0047 500		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47

Note 1. Not used in Models SO11US & SO12US

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Grundig Majestic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg		7801-226					Balance
B	1.3meg*							Volume, Left Channel
C	1.3meg*							Volume, Right Channel
R2A	3meg		7806-235					Bass, Right Channel
B	3meg							Bass, Left Channel
R3A	1meg		7806-234					Treble, Left Channel
B	1meg							Treble, Right Channel

* Taps ⓐ 275K, 525K, 900K.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	1meg			
R5	150Ω			
R6	330K			
R7	15K 1W			
R8	1000Ω			
R9	6800Ω			
R10	10Ω			
R11	1meg			
R12	33K			
R13	120Ω			
R14	100Ω			
R15	10Ω			
R16	220K			
R17	1000Ω			
R18	68K			
R19	4700Ω			
R20	22K			
R21	33K			
R22	150K			
R23	330K			
R24	1.8meg			
R25	470K			
R26	1meg			
R27	100K			
R28	33K 1W			
R29	220K			
R30	10K			
R31	2.2meg			
R32	100K			
R33	100K			
R34	2.2meg			
R35	330K			
R36	330K			
R37	220K			
R38	27K			
R39	6.8meg			
R40	100K			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R41	100K			
R42	82K			
R43	100K			
R44	100K			
R45	18K			
R46	4.7meg			
R47	330K			
R48	150Ω			
R49	10meg			
R50	1800Ω			
R51	100K			
R52	820K			
R53	22K			
R54	80Ω 1W			
R55	1meg			
R56	220K			
R57	100K			
R58	330K			
R59	220K			
R60	330K			
R61	82K			
R62	100K			
R63	100K			
R64	18K			
R65	4.7meg			
R66	330K			
R67	100K			
R68	150Ω			
R69	100K			
R70	820K			
R71	1000Ω 4W	PW5-1000	5W-SQ-1000	
R72	1800Ω			
R73	10meg			
R74	12K			
R75	4.7meg			
R76	4.7meg			
R77	33K 1W			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Grundig Majestic PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	FM Ant. Matching	9238-068					① Wound on 100Ω
L2	FM Ant.	9231-027					
L3	RF Choke	BV1975					
L4	RF Choke	BV1956 ①					
L5	FM RF	9226-037					
L6	RF Choke	BV1976					

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Grundig Majestic PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L7	FM Osc.	9226-038					
L8	RF Choke	BV1960					
L9	FM Mixer Plate	9226-032					
L10	1st FM IF	9226-033					
L11	SW Ant.	9232-001					
L12	460KC IF Trap	9208-057					
L13	Loopstick	9233-020	BC-419	705-A		T532	
L14	RF Choke	9208-001					
L15	SW Osc.	BV1681					
L16	BC Osc.	9232-002					
L17A	2nd FM IF	7207-308					
B	1st AM IF						
L18A	Ratio Detector	7207-328					
B	2nd AM IF						
L19	Tone Choke	BV2048					
L20	Tone Choke	BV2048					
L21	Line Choke	2227-004					
L22	Line Choke	9227-005					

KN 681 Coils (RF-IF)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	Grundig Majestic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117Vⓐ .7A	220Vⓐ .220A AC	6.3Vⓐ 3.5A	9096-025					
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT ⓐ .6A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Grundig Majestic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4800Ω	2-4Ω CT	9060-056					
T3	4800Ω	2-4Ω CT	9060-047					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Grundig Majestic PART No.	QUAM PART No.	
SP1	8"x 12"	PM	1-2Ω	7046-001/002		
SP2	5"x 7"	PM	1-2Ω	0459-000	57A15	
SP3	8"x 12"	PM	1-2Ω	7046-001/002		
SP4	5"x 7"	PM	1-2Ω	0459-000	57A15	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	Grundig Majestic PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.120A	B250C150K4				Bridge Type Selenium

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Grundig Majestic PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	1A 125V S/B			313003 (3AG 1A 250V) S/B		MDX3	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	Grundig Majestic PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M3			17	Not Req.	26S	S1-1 * S3-3 *	8TA4-S	N-8TA-S*	

MISCELLANEOUS

ITEM No.	PART NAME	Grundig Majestic PART No.	NOTES
M4	Tuning Cap.	9653-609	FM, 2 Gang (Part of FM Tuner Unit)
M5	Tuning Cap.	9653-012	AM, 2 Gang
M6	Switch		Function Selector (Pushbutton Type)
M7	Switch	7612-043	Tone (Pushbutton Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

HEATH MODELS
SA-2, W-SA-2

HEATH MODELS
SA-2, W-SA-2

HEATH MODELS
SA-2, W-SA-2

TRADE NAME	Heath Models SA-2 (Kit), W-SA-2 (Wired)
MANUFACTURER	Heath Co., A Subsidiary of Daystrom, Inc., Benton Harbor, Michigan
TYPE SET	AC Operated 11 Tube Stereo Amplifier
POWER SUPPLY	105 — 125 Volts AC, 50-60 Cycles RATING 115 Watts, 1 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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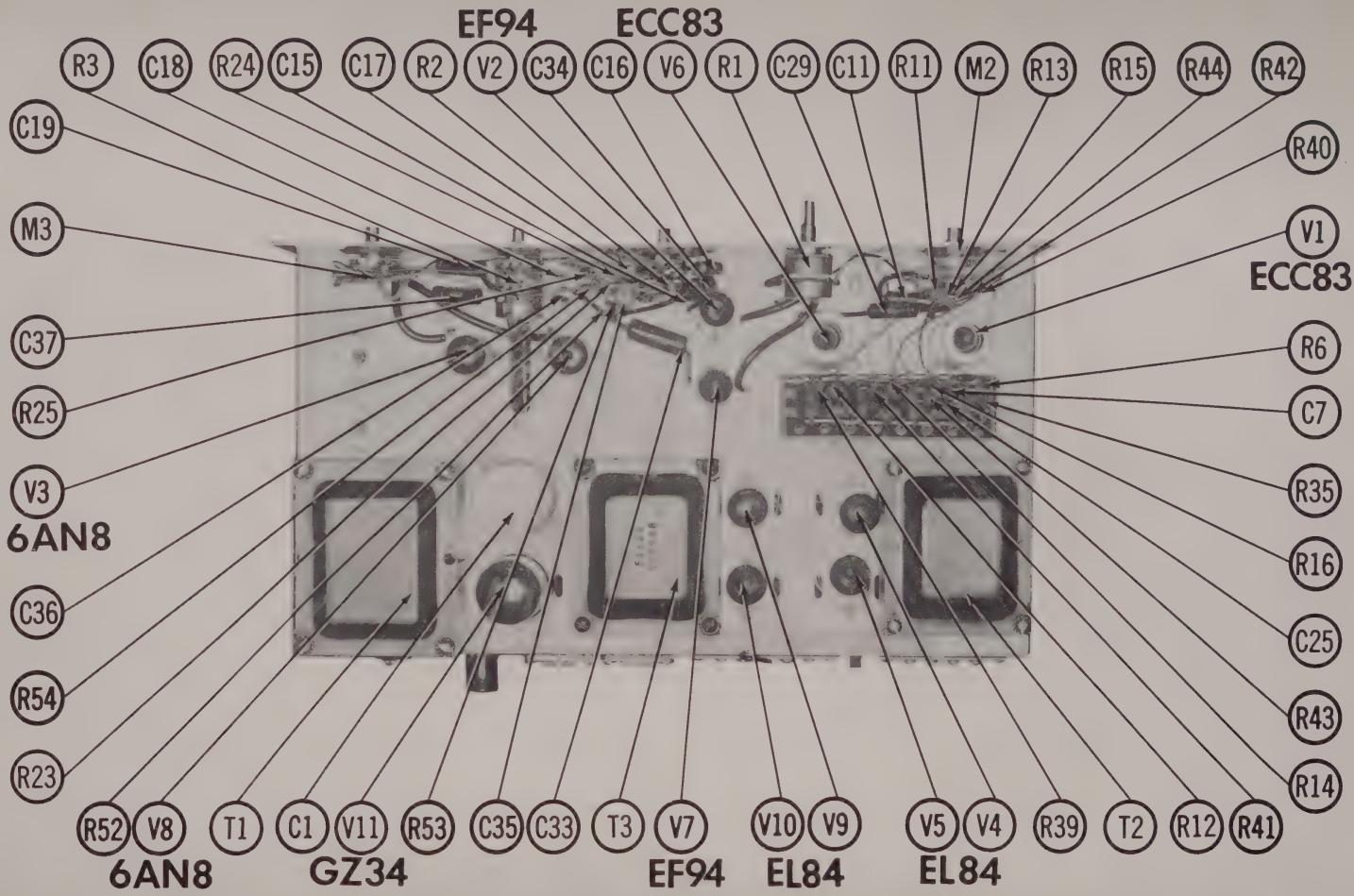
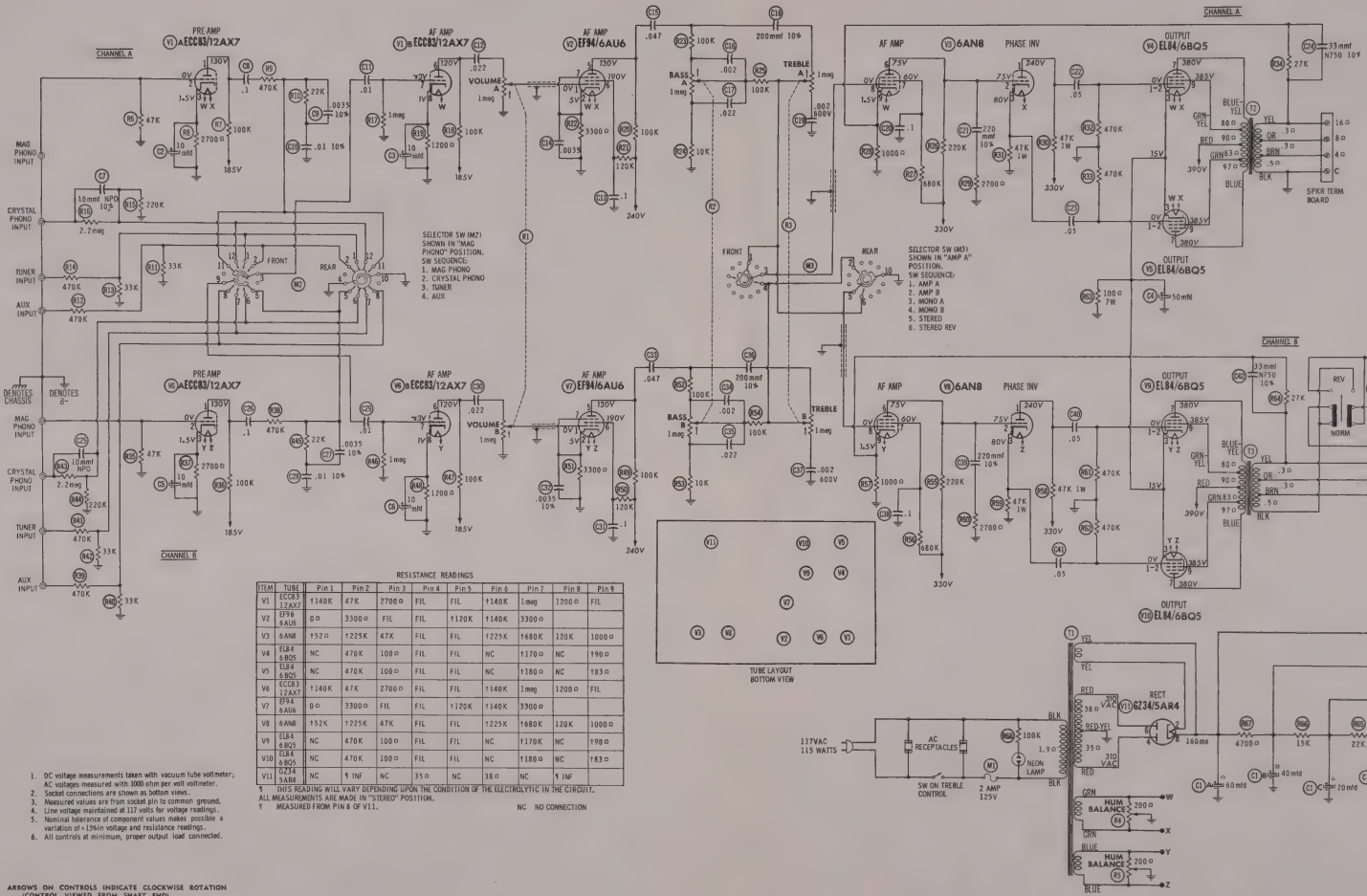


CHASSIS-TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†140K	47K	2700Ω	FIL	FIL	†140K	1meg	1200Ω	FIL
V2	EF96 6AU6	0Ω	3300Ω	FIL	FIL	†120K	†140K	3300Ω		
V3	6AN8	†52Ω	†225K	47K	FIL	FIL	†225K	†680K	120K	1000Ω
V4	EL84 6BQ5	NC	470K	100Ω	FIL	FIL	NC	†170Ω	NC	†90Ω
V5	EL84 6BQ5	NC	470K	100Ω	FIL	FIL	NC	†180Ω	NC	†83Ω
V6	ECC83 12AX7	†140K	47K	2700Ω	FIL	FIL	†140K	1meg	1200Ω	FIL
V7	EF94 6AU6	0Ω	3300Ω	FIL	FIL	†120K	†140K	3300Ω		
V8	6AN8	†52K	†225K	47K	FIL	FIL	†225K	†680K	120K	1000Ω
V9	EL84 6BQ5	NC	470K	100Ω	FIL	FIL	NC	†170K	NC	†90Ω
V10	EL84 6BQ5	NC	470K	100Ω	FIL	FIL	NC	†180Ω	NC	†83Ω
V11	6CA4 5AR4	NC	¶ INF	NC	35Ω	NC	38Ω	NC	¶ INF	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT. ALL MEASUREMENTS ARE MADE IN "STEREO" POSITION.
† MEASURED FROM PIN 8 OF V11.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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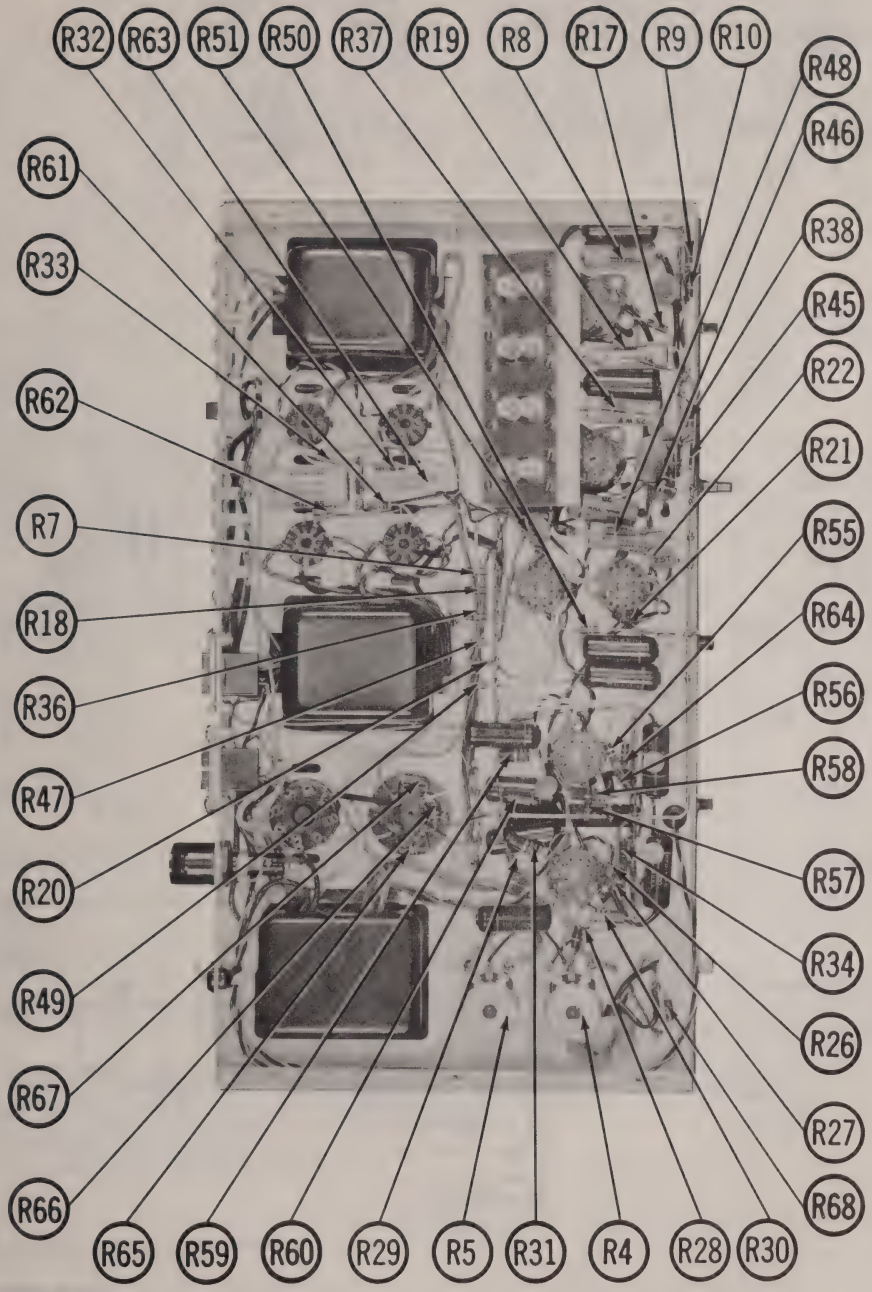
HEATH MODELS SA-2, W-SA-2



CHASSIS BOTTOM VIEW-RESISTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel A Preamp. - Channel A AF Amp.	ECC83/12AX7	V7	Channel B AF Amp.	EF94/6AU6
V2	Channel A AF Amp.	EF94/6AU6	V8	Channel B AF Amp. - Phase Inverter	6AN8
V3	Channel A AF Amp. - Phase Inverter	6AN8	V9	Channel B Output	EL84/6BQ5
V4	Channel A Output	EL84/6BQ5	V10	Channel B Output	EL84/6BQ5
V5	Channel A Output	EL84/6BQ5	V11	Rectifier	GZ34/5AR4
V6	Channel B Preamp. - Channel B AF Amp.	ECC83/12AX7			

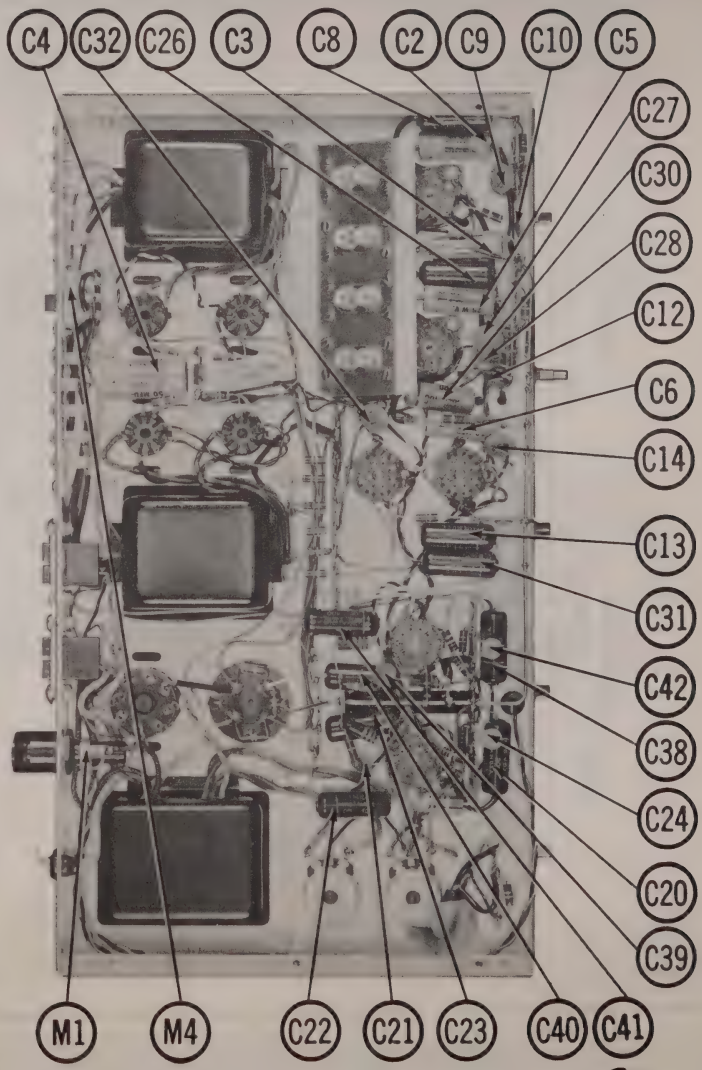
ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	HEATH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲60	450	25-93		C0330	FP396.1	TMT-3739	TVL-3789	
B	■40	350			BR2025	TC795	TD-50-450	TVA-1611	
C	▲20	350							
D	20	250							
C2	10	25	25-95	PRS1250	BBR10-25	TC22	TD-10-25	TVA-1204	
C3	10	25	25-95	PRS1250	BBR10-25	TC22	TD-10-25	TVA-1204	
C4	50	25	25-85	PRS1265	BBR50-25	TC29	TD-50-25	TVA-1206	
C5	10	25	25-95	PRS1250	BBR10-25	TC22	TD-10-25	TVA-1204	
C6	10	25	25-95	PRS1250	BBR10-25	TC22	TD-10-25	TVA-1204	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C8	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C9	.0035 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C10	.01 10%		DI-10000		PM6S1	CCD-103		10TS-S10
C11	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C12	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C13	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C14	.0035 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C15	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C16	.002 600V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C17	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C18	200 10%		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C19	.002 600V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C20	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C21	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C22	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-473	GEM-415	4TM-S50
C23	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-473	GEM-415	4TM-S50
C24	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C25	10 NPO		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C26	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C27	.0035 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C28	.01 10%		DI-10000		PM6S1	CCD-103		10TS-S10
C29	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C30	.022 400V		P488N-022	DD-503	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C31	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C32	.0035 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C33	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C34	.002 600V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C35	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C36	200 10%		DI-002	DD-201	L10T2	CCD-201	GP320	10TS-T20
C37	.002 600V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C38	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C39	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T20
C40	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C41	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C42	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	HEATH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg		12-19	F1-52				Volume, Channel A
B	1meg			R2-52				Volume, Channel B
C	Spring			AK-32				Friction Drive
R2A	1meg		12-21	B-70	AD47-1meg-Z		FBI6A	Bass, Channel A
B	1meg			SR-70	Not Req.		RUI6A	Bass, Channel B
C	Shaft			Not Req.	FS-3		CS3500	
R3A	1meg		14-1	B-70	AD47-1meg-Z		FBI6A	Treble, Channel A
B	1meg			SR-70	Not Req.		RUI6A	Treble, Channel B
C	Shaft			Not Req.	FS-3		CS3500	
D	Switch			KR-1	SWE-12		US41	Power Off-On
R4A	200Ω		10-61	AB-2		BII-201		Hum Balance, Channel A
B	Shaft			AK-1		TMI		
R5A	200Ω		10-61	AB-2		BII-201		Hum Balance, Channel B
B	Shaft			AK-1		TMI		

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R6	47K				R38	470K			
R7	100K				R39	470K			
R8	2700Ω				R40	33K			
R9	470K				R41	470K			
R10	22K				R42	33K			
R11	33K				R43	2, 2meg			
R12	470K				R44	220K			
R13	33K				R45	22K			
R14	470K				R46	1meg			
R15	220K				R47	100K			
R16	2, 2meg				R48	1200Ω			
R17	1meg				R49	100K			
R18	100K				R50	120K			
R19	1200Ω				R51	3300Ω			
R20	100K				R52	100K			
R21	120K				R53	10K			
R22	3300Ω				R54	100K			
R23	100K				R55	220K			
R24	10K				R56	680K			
R25	100K				R57	1000Ω			
R26	220K				R58	47K 1W			
R27	680K				R59	47K 1W			
R28	1000Ω				R60	2700Ω			
R29	2700Ω				R61	470K			
R30	47K 1W				R62	470K			
R31	47K 1W				R63	100Ω 7W			
R32	470K				R64	27K			
R33	470K				R65	22K			
R34	27K				R66	15K			
R35	47K				R67	4700Ω			
R36	100K				R68	100K			
R37	2700Ω								

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	HEATH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ⓐ 1A	620VCT ⓐ .160A DC	5V ⓐ 1.9A	54-93					
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ⓐ 2.5A	6.3V ⓐ 2.5A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	HEATH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	8500Ω CT Tap ⓐ 2500Ω CT	16Ω Tap ⓐ 8Ω, 4Ω	51-29					
T3	8500Ω CT Tap ⓐ 2500Ω CT	16Ω Tap ⓐ 8Ω, 4Ω	51-29					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			HEATH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 125V	421-3		313002 (3AG 2A 125V)	342001	MDL 2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	HEATH PART No.	NOTES
M2	Switch	63-215	Input Selector (Rotary Wafer Type)
M3	Switch	63-216	Function Selector (Rotary Wafer Type)
M4	Switch	60-2	Phase Reversal (DPDT Slide Type)

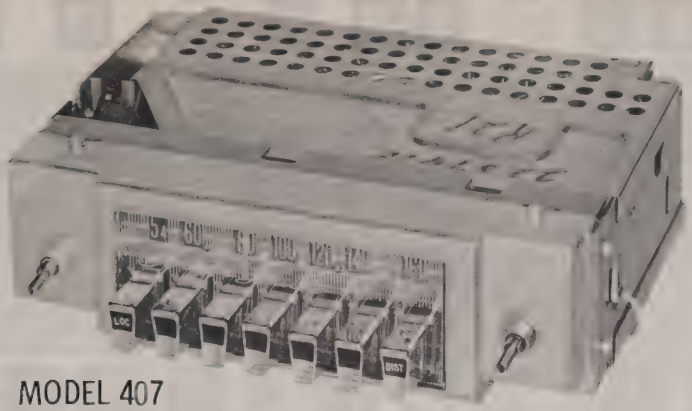
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

**MOPAR MODELS
404, 407**



MODEL 407

TRADE NAME	Mopar Models 404 (14BI) For 1961 Imperial, 407 (14BC) For 1961 Chrysler
MANUFACTURER	Bendix Radio Div., The Bendix Corp., Baltimore 4, Maryland
TYPE SET	Battery Operated 4 Tube - 3 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1.1 Amp. @12.6 Volts DC (1.4 Amp. When Tuning)
TUNING RANGE—BROADCAST	530 — 1605KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set Volume Control fully counterclockwise.
Set Tone Control fully clockwise.
Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A4... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 9 (grid) of Converter. Low side to chassis.	262.5KC (Unmod.)	High end stop.	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Antenna receptacle thru dummy (Fig. 1).	1605KC	"	"	A5, A6, A7	"
	Step 3 is necessary only if tuner has been tampered with or components changed. If necessary back tuning cores out of coils. Repeat Step 2.					
3.	Antenna receptacle thru dummy (Fig. 1).	1000KC	Tuner Carriage exactly ½" from high end stop.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10	Adjust for maximum deflection.
4.	"	1000KC at 250uv.			R2	Preset R2 fully counterclockwise. Press LOC button to start set searching. Turn R2 clockwise slowly until tuner stops at 250uv. signal.
5.	"	1000KC at 125uv.				See that tuner does not stop on 125uv. signal.
6.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull Pushbutton out.
2. Tune manually to desired station.
3. Press Pushbutton in firmly.
4. Repeat for remaining Pushbuttons.

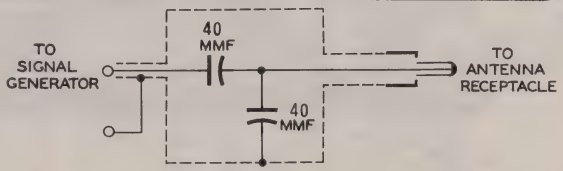


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD794

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MOPAR MODELS
404, 407

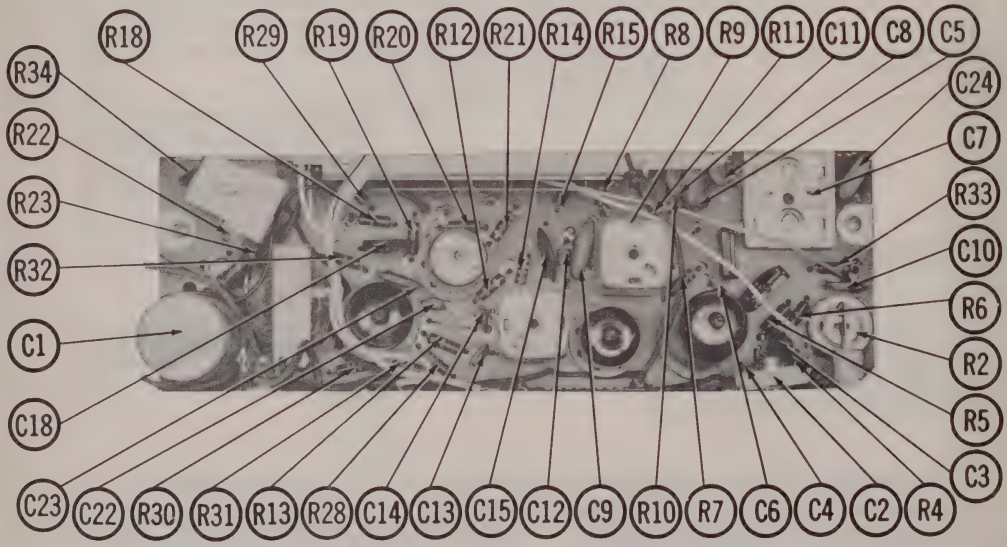
MOPAR MODELS
404, 407

SET 545 FOLDER 10

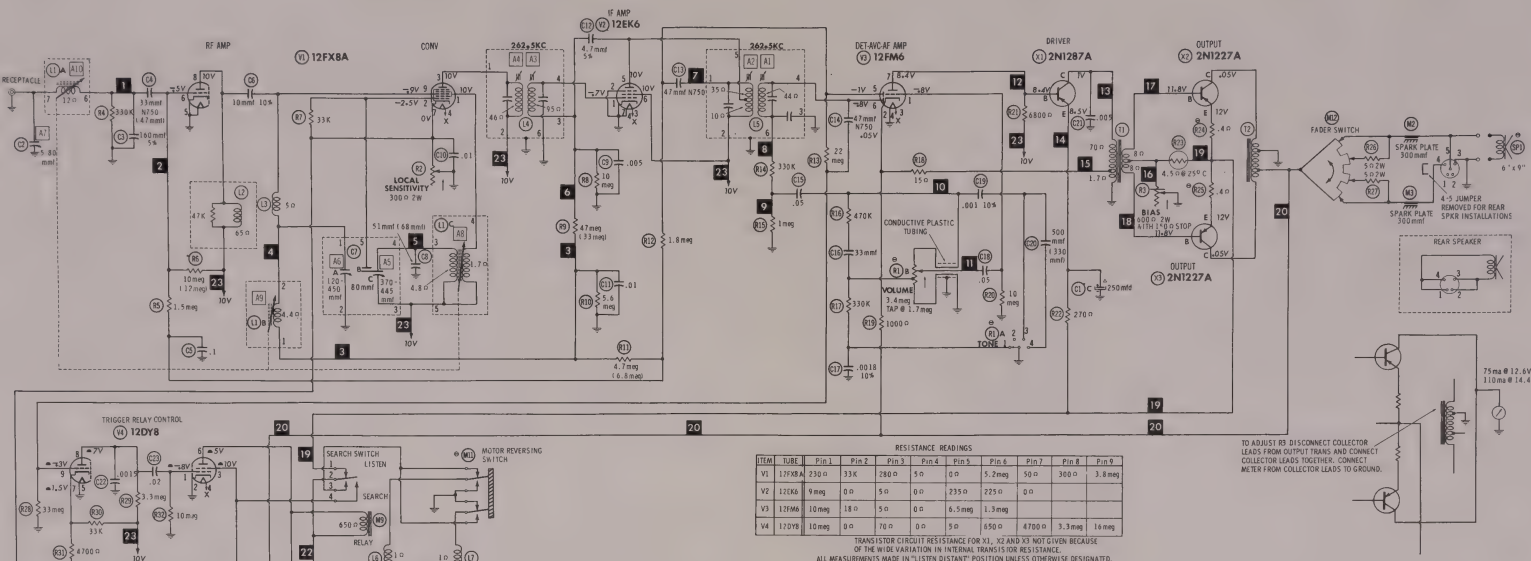
A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PRINTED BOARD



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8A	230Ω	33K	280Ω	5Ω	0Ω	5.2meg	50Ω	300Ω	3.8meg
V2	12EK6	9meg	0Ω	5Ω	0Ω	235Ω	225Ω	0Ω		
V3	12FM6	10meg	18Ω	5Ω	0Ω	6.5meg	1.3meg			
V4	12DY8	10meg	0Ω	70Ω	0Ω	5Ω	650Ω	4700Ω	3.3meg	16meg

TRANSISTOR CIRCUIT RESISTANCE FOR X1, X2 AND X3 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
ALL MEASUREMENTS MADE IN "LISTEN DISTANT" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED IN SEARCH POSITION.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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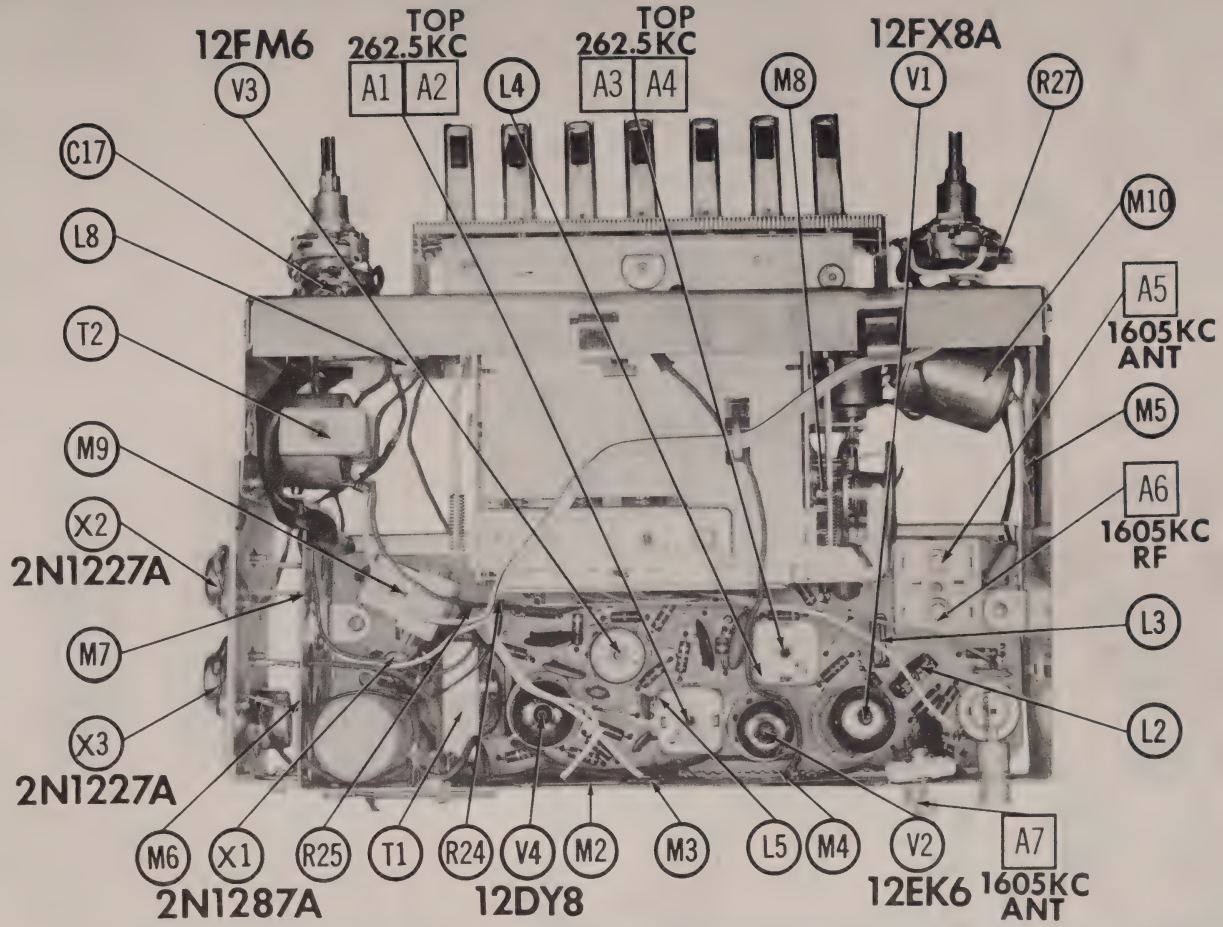
MOPAR MODELS 404, 407



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amp.-Converter	12FX8A	V3	Det.-AVC-AF Amp.	12FM6 (12FK6) *
V2	IF Amplifier	12EK6	V4	Trigger Relay Control	12DY8

* Alternate

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N1287A	Driver	2N591	2N362		PNP
X2	2N1227A	Output	2N301	2N633		PNP Note 1
X3	2N1227A	Output	2N301	2N633		PNP Note 1

Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲500	16	220353-13	PWH3-00-94		PWP300.4		PCLS-3026.6*	
B	■250	16							
C	▲250	16							

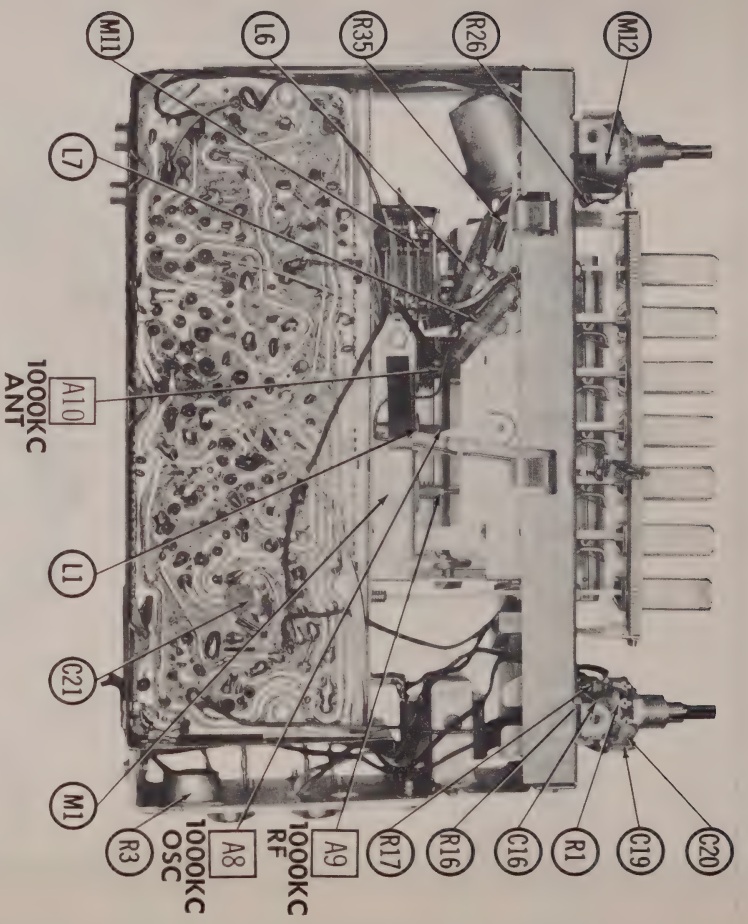
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	5-80	#219083-3				462		
C3	160 5%		1469-00016	TCZ-160	22RT16	CM-19B-161J		MS-316
C4	33 N750	(47) †	N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C5	.1 100V		P288N-1	DF-104	CUB2P1	DP-2-104	GEM-201	2TM-P10
C6	10 10%		NPO-SI 10	D6-100	L10Q1	CCD-100	GP410	10TS-Q10
C7A	120-450							
B	80	#219092-16	NPO-SI 82	TCZ-82	C10Q82C	CCTO-820	CNO-482	10TCC-Q82
C	870-445							
C8	51	(68) †	NPO-DI 50	TCZ-51	C10Q51C	CCTO-510	CNO-450	10TCC-Q50
C9	.005 100V		P288N-005	D6-502	CUB6D5	DP-1-502	GEM-625	6TM-D50
C10	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	4.7 5%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C13	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C14	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C15	.05		BPD-05	DD-503	CUB2S5	DP-2-503	GP150	5HK-S50
C16	33		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C17	.0018 10%		DI-1800	DD-182	5R5D1	CCD-182	GP218	10TS-D18
C18	.05		BPD-05	DD-503	CUB2S5	DP-2-503	GP150	5HK-S50
C19	.001 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C20	500	(330) †	DI-500	DD-501	BYA10T5	CCD-501	B-350	10TS-T50
C21	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C22	.0015		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C23	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C24	.05 100V		P288N-05	DD-503	CUB2S5	DP-2-503	GEM-415	2TM-S50

\# Bendix Part Number
† Alternate Value

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	Switch		2091110-1①					Tone
B	3.4meg	½						Volume
	1.7meg Tap							
C	Switch							Power Off-On
R2	300Ω	2(WW)	2090181-4			110-300		Local Sensitivity
R3	600Ω	2(WW)	219555-14		39-700-200	112-500 *	FL-600S	Bias
	150Ω Stop							

① Some versions of Model 407 may use Part #2091110-3. Model 404 may use Part #2091110-4.
* Use 150Ω 2W series resistor.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	330K			
R5	1.5meg			
R6	10meg			(12meg) †
R7	33K			
R8	10meg			
R9	47meg			(33meg) †
R10	5.6meg			
R11	4.7meg			(6.8meg) †
R12	1.8meg			
R13	22meg			
R14	330K			
R15	1meg			
R16	470K			
R17	330K			
R18	15Ω			
R19	1000Ω			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R20	10meg			
R21	6800Ω			
R22	270Ω			
R23	4.5Ω@25°C			Pt. #220269-11
R24	.4Ω			Pt. #2091295-2
R25	.4Ω			Pt. #2091295-4
R26	5Ω 2W			
R27	5Ω 2W			
R28	33meg			
R29	3.3meg			
R30	33K			
R31	4700Ω			
R32	10meg			
R33	680Ω			
R34	220Ω			
R35	220Ω			

† Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1A	Ant.						① Part of M1
B	RF	2090131-24 ①					② Includes 47K
C	Osc.						③ IRC Part #CL-1
L2	RF Choke (2MH)	2090088-12②					
L3	RF Choke (62uh)	2090088-11	TV-193	6110	RTC-8573	T338	
L4	Input IF	2090876-6					
L5	Output IF	2090877-7					
L6	RF Choke (2.7uh)	2090671-3 ③	SW-630	4604	RTC-8517	T857	
L7	RF Choke (2.7uh)	2090671-3 ③	SW-630	4604	RTC-8517	T857	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L8	1.4A	.5Ω	.002 HY	2090520-6①					① Alternate Part # 2090520-8

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.5	1	2090433-8					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
	PRI.	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	25Ω Tap@ 3-4Ω	2090266-6					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	QUAM PART No.	
SP1	6½"x 9"	PM	3-4Ω	2091269-2 *	69A3	* Model 407
	7"	PM	3-4Ω	2091269-3 †	7A31	† Model 404

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	Tuner	2091312-2	Complete, Less Pointer, Model 407
	Tuner	2091312-3	Complete, Less Pointer, Model 404
M2	Spark Plate	220267-16	300mmf
M3	Spark Plate	220267-16	300mmf
M4	Spark Plate	220267-16	300mmf
M5	Spark Plate	220267-12	300mmf
M6	Spark Plate	220267-12	300mmf
M7	Spark Plate	220267-17	200mmf
M8	Switch	2091315-2	Distant-Local Search (With Mounting Plate)
M9	Relay	2091297-2	With Cover Assembly
M10	Motor (DC)	2091522-1	
M11	Switch	2091661-1	Motor Reversing (With Mounting Bracket and Cover)
	Switch	2090051-1	Motor Reversing (Without Mounting Bracket)
M12	Switch	2090886-4	Fader, Model 407
	Switch	2090886-5	Fader, Model 404

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Lens	2091629-1	Clear, Model 407
Dial Lens	2090999-1	Clear, Model 404
Dial Pointer	2090966-1	
Pushbutton	2091189-1	Tuning, Model 407
Pushbutton	2091683-1	Tuning, Model 404
Pushbutton	2091674-1	Local, Model 407
Pushbutton	2091683-2	Local, Model 404
Pushbutton	2091683-3	Distant, Model 404
Pushbutton	2091674-2	Distant, Model 407
Knob	2091142-1	Tuning, Volume, Model 407
Knob	2091122-1	Tuning, Volume, Model 404
Knob	2091121-1	Tone, Fader, Model 404
Knob	2091143-1	Tone, Fader, Model 407

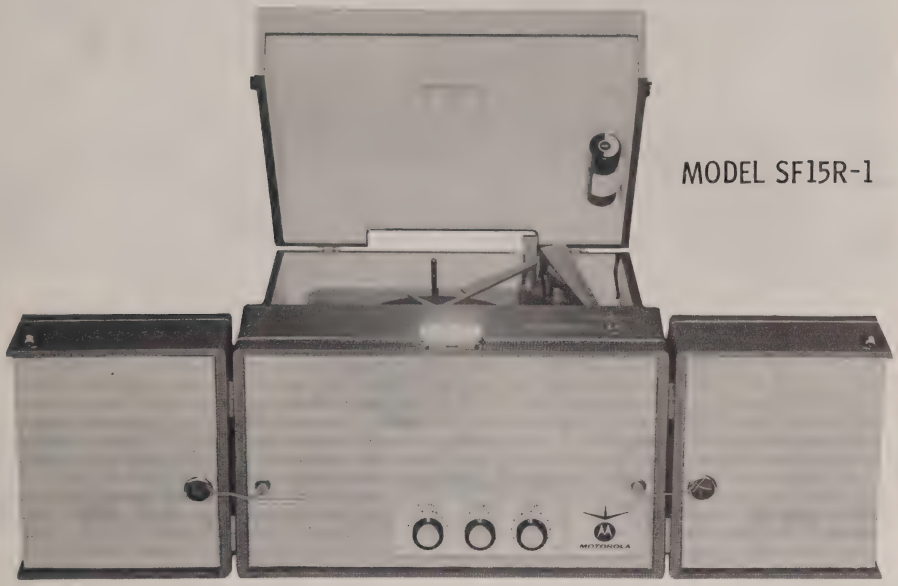
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8861

PHOTOFACT® Folder

MOTOROLA MODELS SF15G, G-1, G-2, R, R-1, R-2 (Ch. HS-860, HS-898)

MOTOROLA MODELS SF15G, G-1, G-2, R, R-1, R-2 (Ch. HS-860, HS-898)



MODEL SF15R-1

MOTOROLA MODELS SF15G, G-1, G-2, R, R-1, R-2 (Ch. HS-860, HS-898)

TRADE NAME	Motorola Models SF15G, SF15G-2, SF15R, SF15R-2 (Ch. HS-860) SF15G-1, SF15R-1 (Ch. HS-898)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC Operated 4 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles RATING 29 Watts, .28 Amp. @117 Volts AC (Less Motor)

MODELS SF15 SERIES USE RECORD CHANGER BR11RC. FOR SERVICE INFORMATION, SEE SIMILAR B.S.R. UA12 — PHOTOFACT SET 465 FOLDER 6

MODELS SF15-1 SERIES USE RECORD CHANGER VM40RC. FOR SERVICE INFORMATION, SEE SIMILAR V-M 1586 — PHOTOFACT SET 527 FOLDER 14

MODELS SF15-2 SERIES USE RECORD CHANGER VM20RC. FOR SERVICE INFORMATION, SEE SIMILAR V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KT773

SET 545 FOLDER 11

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AX7A	V3	Right Channel Output	35C5
V2	Left Channel Output	35C5	V4	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■50	150	23K642088	AFH3-11-50	XC0105	FP311.65	TMT-3133	TVL-3442	
B	▲50	150							
C	50	150							
C2	10	15NP	23K737749	PRS7315	BBR10-150	TCN5010		TVANS-1155*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C4	.002 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C5	.005 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C6	.005 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C7	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S20
C8	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C9	.2 200V		P288N-2		CUB2P2	2DP-4-204	GEM-202	2TM-P20
C10	.002 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C11	.005 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C12	.005 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C13	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S20
C14	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C15	.2 200V		P288N-2		CUB2P2	2DP-4-204	GEM-202	2TM-P20
C16	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg 600K Tap	½	18D60116A03	BT-174 †			FB26T75	Loudness, Right Channel
B	2meg 600K Tap	½		STR-174 †			RU26T75	Loudness, Left Channel
C	Shaft			Not Req.			CS3500	
R2A	1meg	½	18D60116A05	B-68			FA16R	Tone, Right Channel
B	1meg	½		SR-68			RU16R	Tone, Left Channel
C	Shaft			Not Req.			CS3500	
R3A	550K *	½	18D60116A04					Balance
B	Switch							Push-Pull

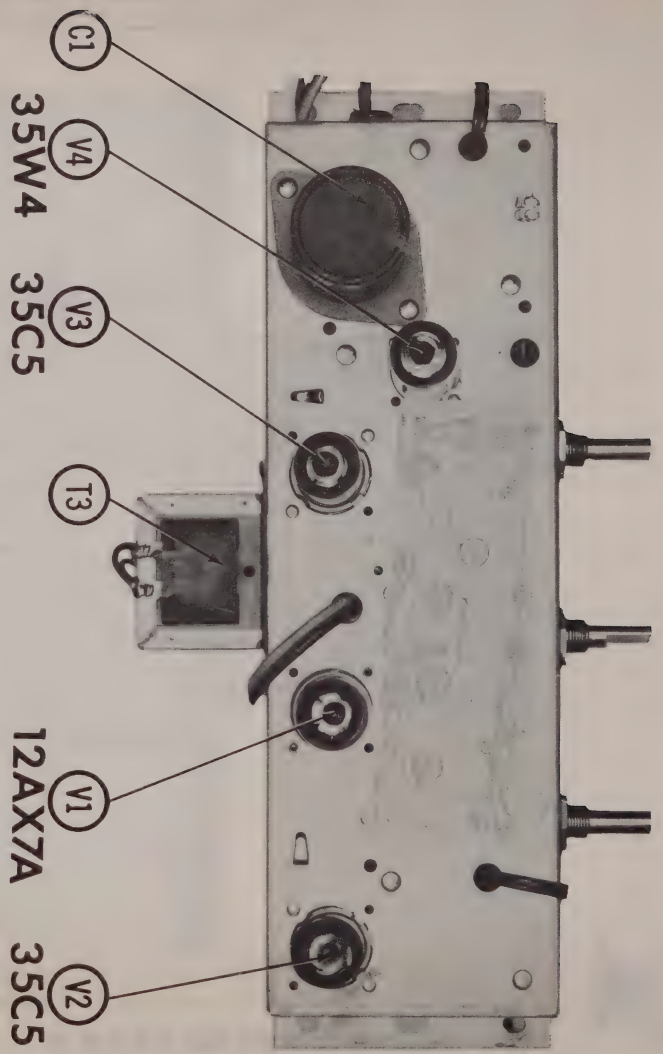
* Taps and stops at 27.5K & 522.5K.
† Use 500K tap.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	68K				R8	820Ω			
R5	3.3meg				R9	1meg			
R6	220K				R10	100Ω 1W			
R7	120K				R11	100Ω			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R12	68K				R17	1meg			
R13	3.3meg				R18	100Ω			
R14	220K				R19	1000Ω			
R15	120K				R20	47Ω 1W			
R16	820Ω				R21	15Ω			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2100Ω	6-8Ω	25B60255A01C			22S86	S-63X	
T2	2100Ω	6-8Ω	25B60255A01C			22S86	S-63X	
T3	4200Ω CT	6-8Ω	25B60254A01B	A-2900	A-3856	24S04	S-63X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5"	PM	6-8Ω	50K647083	5A1Z8	
SP2	6"	PM	6-8Ω	50K647085	6A2IZ8	
SP3	5"	PM	6-8Ω	50K647083	5A1Z8	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	MOTOROLA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	59B64269l (or) 59K643765	Not Req. Not Req.	13T 13TX	Not Req. Not Req.	13 13X	Not Req. Not Req.	10TB2-S 10B2-SD	Not Req. Not Req.	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36K647035	Loudness, Tone
Knob	36K647034	Balance
Cabinet	16E60331A02	Green, Model SF15G
Cabinet	16E60331A16	Green, Model SF15G-1, SF15G-2
Cabinet	16E60331A01	Red, Model SF15R
Cabinet	16E60331A15	Red, Model SF15R-1, SF15R-2
Handle	55A60357A01	

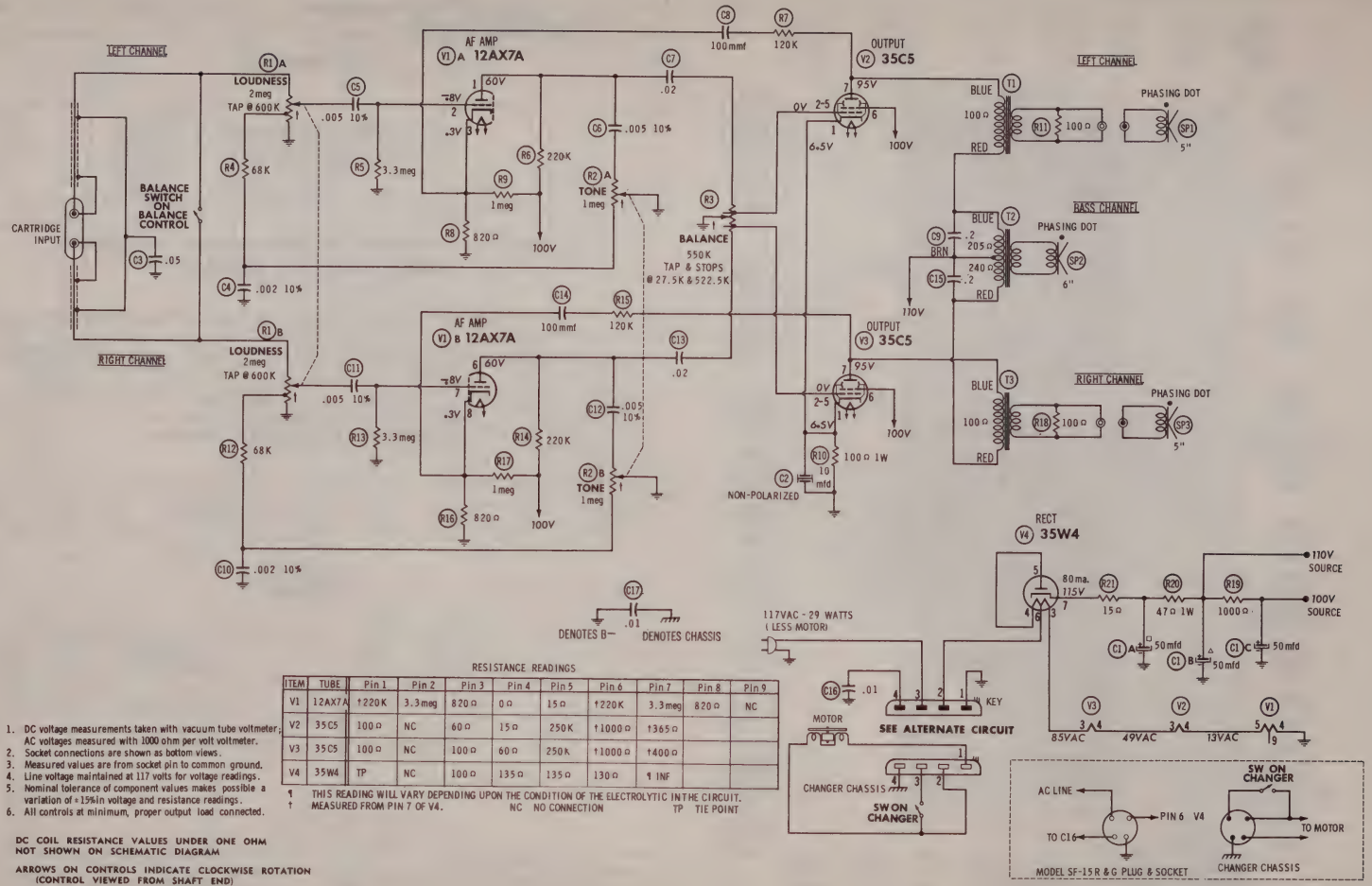
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW

MOTOROLA MODELS SF15G, G-1, G-2,
R, R-1, R-2 (Ch. HS-860, HS-898)

FOLDER 11



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7A	†220K	3.3meg	820Ω	0Ω	15Ω	†220K	3.3meg	820Ω	NC
V2	35C5	100Ω	NC	60Ω	15Ω	250K	†1000Ω	†365Ω		
V3	35C5	100Ω	NC	100Ω	60Ω	250K	†1000Ω	†400Ω		
V4	35W4	TP	NC	100Ω	135Ω	135Ω	130Ω	¶ INF		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V4. NC NO CONNECTION TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MOTOROLA MODELS SF15G, G-1, G-2, R, R-1, R-2 (Ch. HS-860, HS-898)

PHOTOFACT® Folder with CIRCUITRACE®

NORELCO MODEL L4X05T

TRADE NAME	Norelco Model L4X05T		
SUPPLIER	North American Philips Co., Inc., 100 E. 42nd Street, New York 17, N. Y.		
TYPE SET	Battery Operated Transistorized Portable BC-SW Receiver		
POWER SUPPLY	9 Volts DC	RATING	25MA @ 9 Volts DC (No Signal, Min. Volume) 70MA @ 9 Volts DC (Signal, Normal Volume)
TUNING RANGE	BROADCAST 517 – 1622KC SHORT WAVE 1 11.6–21.85MC		SHORT WAVE 2 4.65 – 9.85MC SHORT WAVE 3 1.6 – 3.9MC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A6.....GENERAL CEMENT #8721, 8722
WALSCO #2519
A14, A18, A19, A22.....GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to base of Converter transistor. Low side to chassis.	452KC (400~ 30% AM)	(MW) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4, A5, A6,	Adjust for maximum output. If A6 has insufficient range, set to center and adjust A7 for maximum output.
2.	Loop	1600KC	1600KC	"	A8, A9	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A10, A11	"
4.	"	3.9MC	(SW-3) 3.9MC	"	A12, A13	"
5.	"	1.6MC	1.6MC	"	A14, A15	"
6.	"	9.85MC	(SW-2) 9.85MC	"	A16, A17	"
7.	"	4.65MC	4.65MC	"	A18, A19	"
8.	"	21.85MC	(SW-1) 21.85MC	"	A20, A21	"
9.	"	11.6MC	11.6MC	"	A22	Adjust for maximum output. Repeat Steps 2 thru 9.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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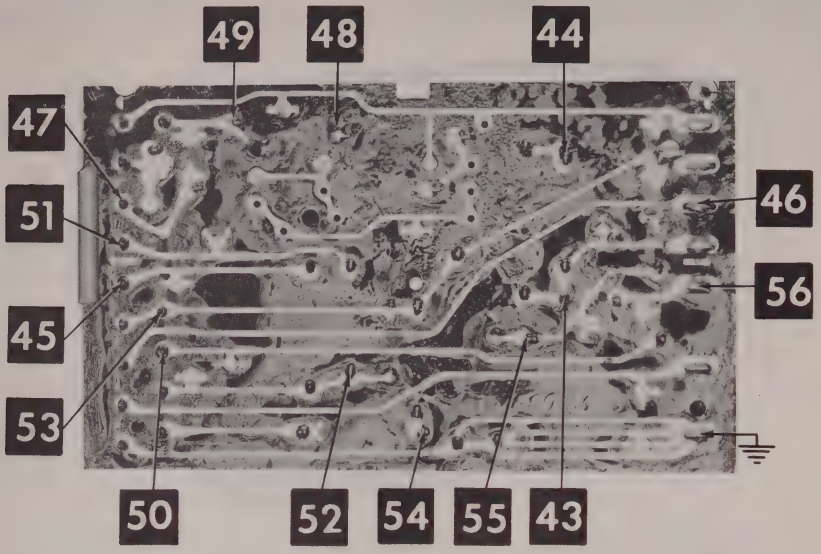
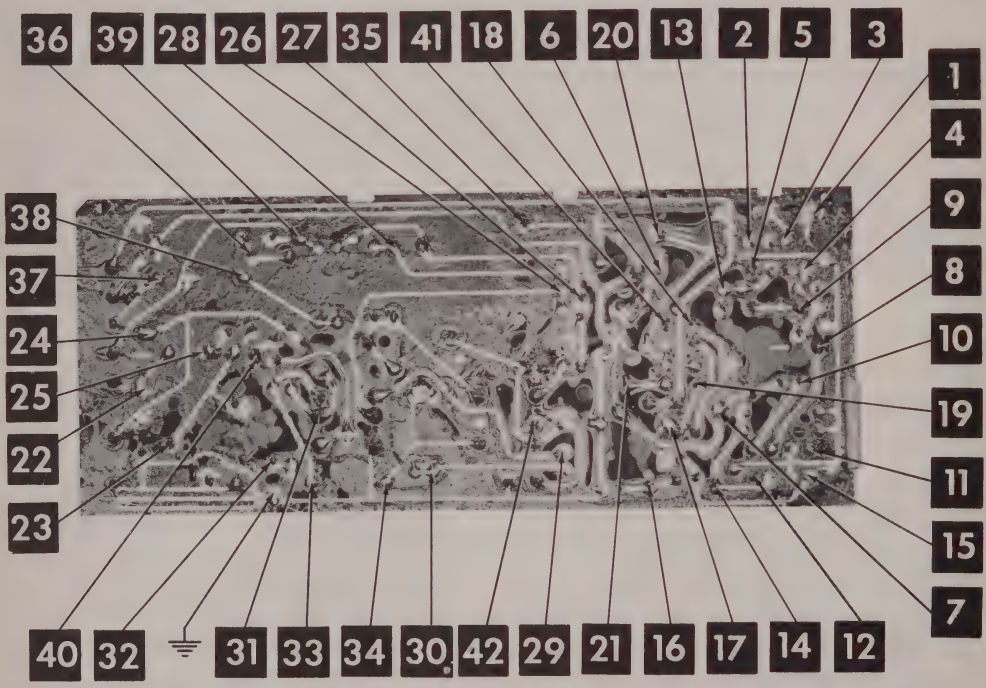
NORELCO MODEL L4X05T
NORELCO MODEL L4X05T
SET 545 FOLDER 12



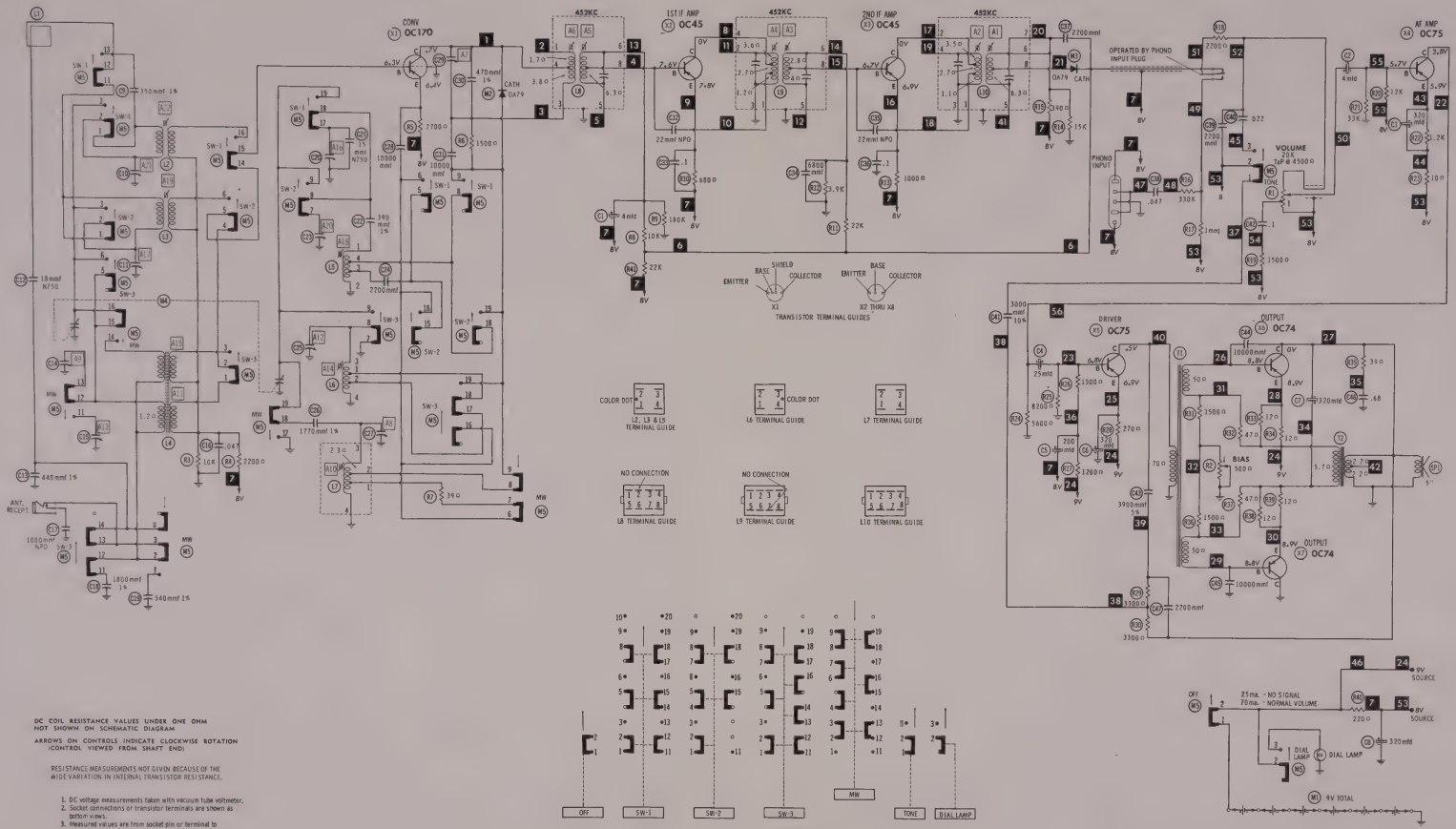
A Howard W. Sams CIRCUITRACE* Photo

AF AMP PRINTED BOARD



A Howard W. Sams CIRCUITRACE* Photo

IF OUTPUT PRINTED BOARD



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE
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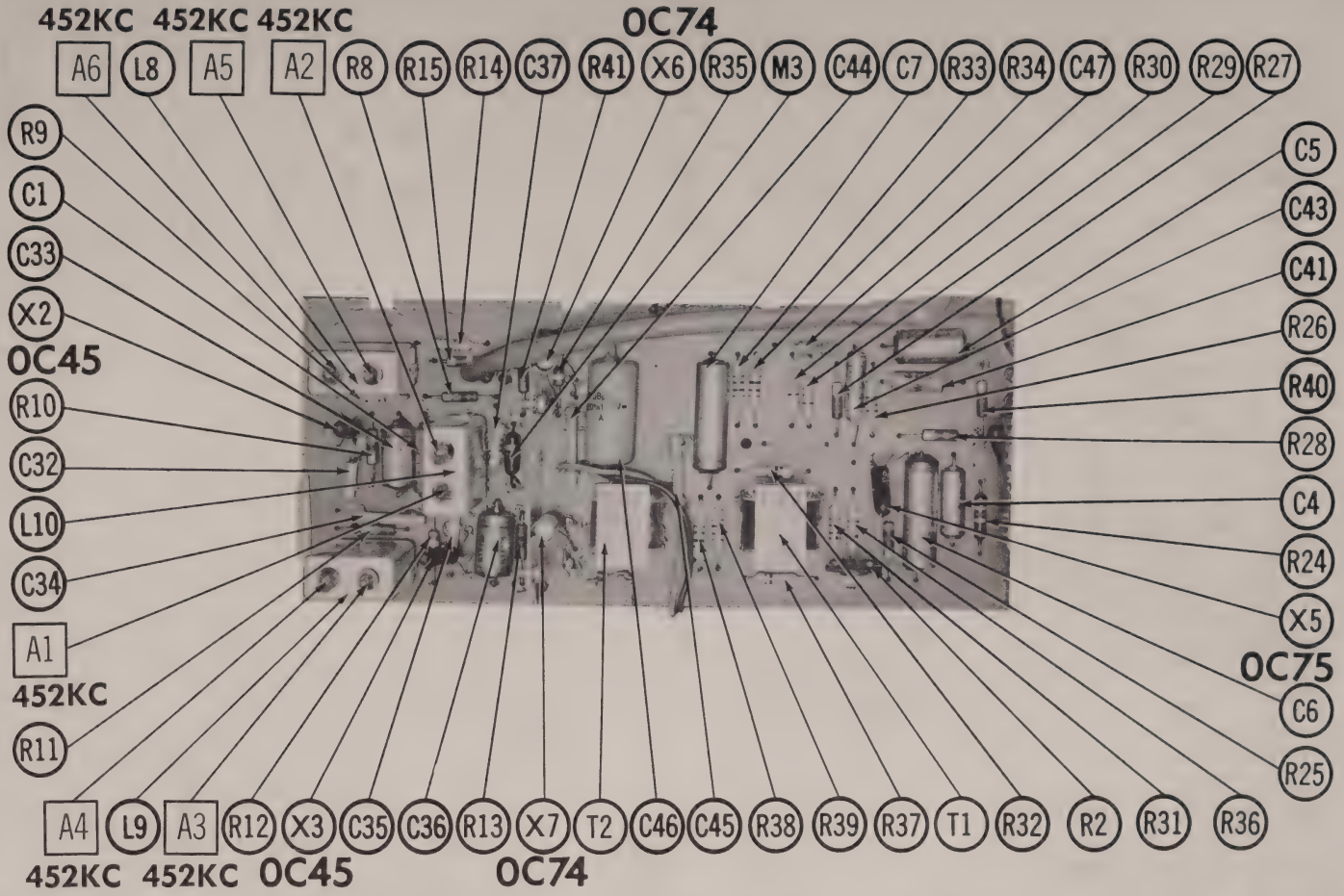
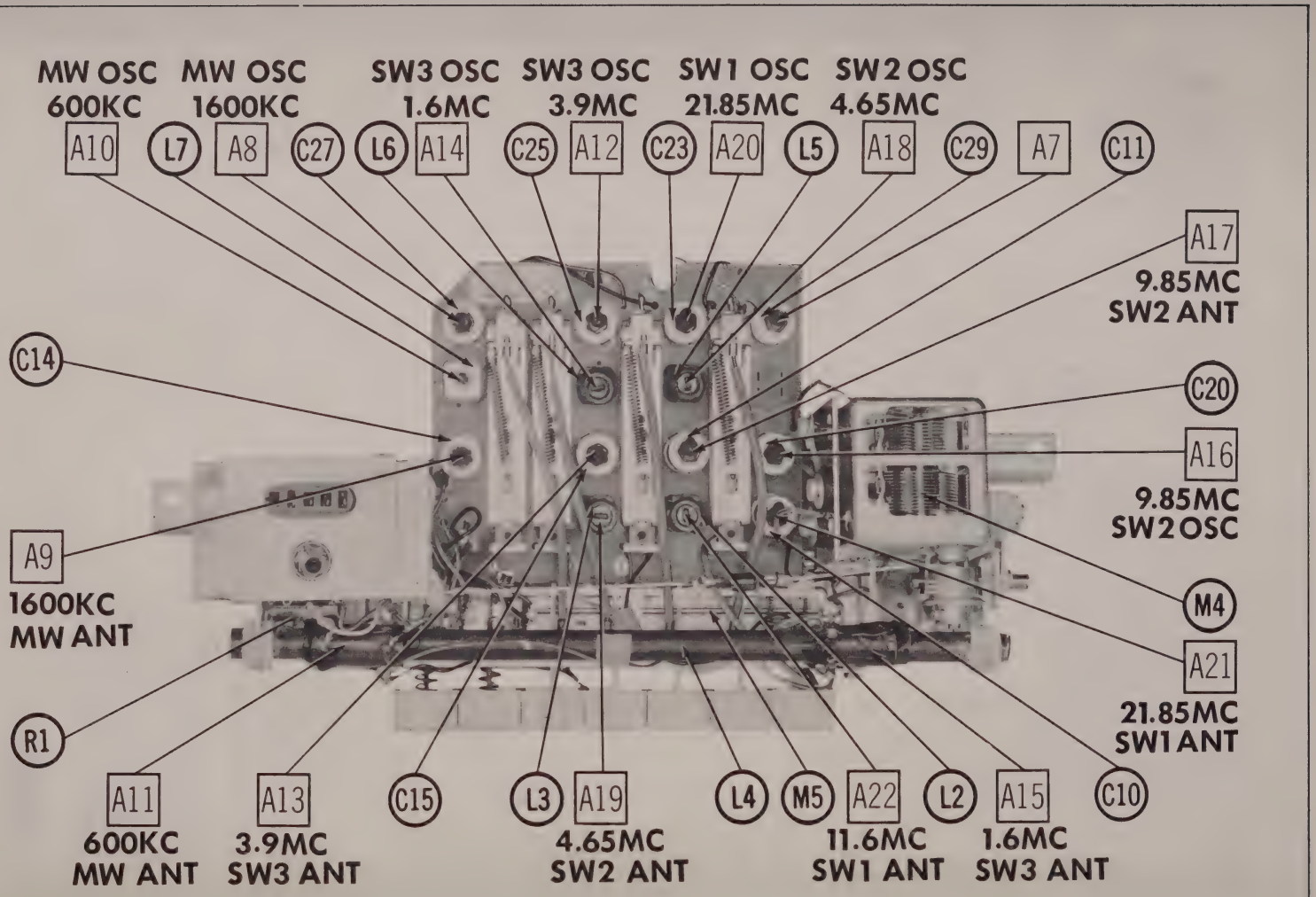
NORELCO MODEL L4X05T



IF OUTPUT PRINTED BOARD

L4X05T

NORELCO MODEL



RF OSC. CHASSIS

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	OC170	Converter				PNP
X2	OC45	1st IF Amplifier		2N483	2N410	PNP
X3	OC45	2nd IF Amplifier		2N483	2N410	PNP
X4	OC75	AF Amplifier	2N406			PNP
X5	OC75	Driver	2N406			PNP
X6	OC74	Output	2N408			PNP
X7	OC74	Output	2N408			PNP

ELECTROLYTIC CAPACITORS

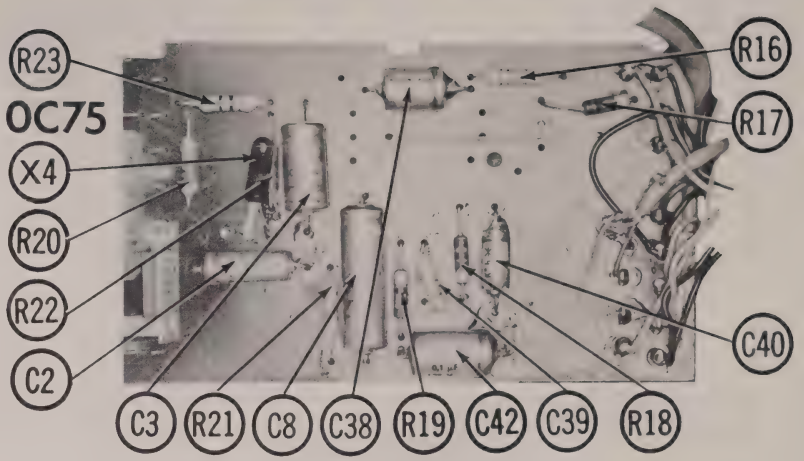
ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	NORELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	4	64		SRE150V5	NLW5-150	TT80X4	MLV5-100	TE-1403	
C2	4	64		SRE150V5	NLW5-150	TT80X4	MLV5-100	TE-1403	
C3	320	2.5		PTT16	NLW300-3		MLV300-3	TE-1066	
C4	25	25		PTT82	NLW25-25	TT25X25	MLV25-25	TE-1207	
C5	200	6.4		PTT31	NLW200-12		MLV200-10	TE-1119.6	
C6	320	10		PTT47	NLW250-12			TE-1138	
C7	320	10		PTT47	NLW250-12			TE-1138	
C8	320	10		PTT47	NLW250-12			TE-1138	

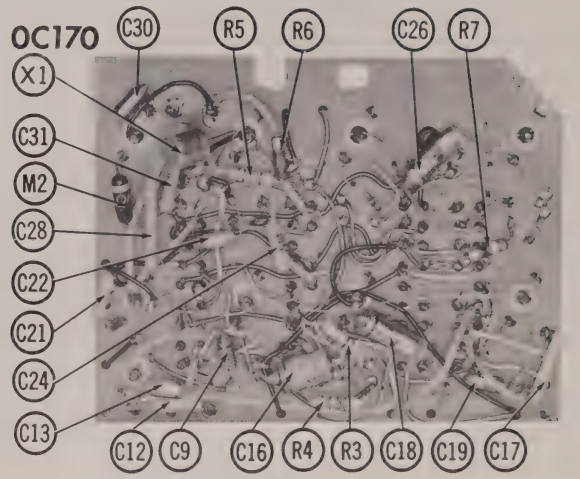
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C9	350 1%							
C10								
C11								
C12	18 N750		N750-SI 18	TCN-18	C10Q18U	CCTN-180	CN7-418	10TCU-Q18
C13	440 1%							
C14								
C15								
C16	.047 125V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C17	1000 NPO					CM-19B-102J		
C18	1800 1%					CM-20E-182F		
C19	540 1%							
C20								
C21	15 N750		N750-SI 15	TCN-15	C10Q15U	CCTN-150	CN7-415	10TCU-Q15
C22	390 1%							
C23								
C24	2200		SI 2200	D6-222		CCD-222	B-222	5HK-D22
C25								
C26	1770 1%							
C27								
C28	10000		SI 10000	D6-103		CCD-103	B-110	5HK-S10
C29								
C30	470 1%					CM-20D-471F		
C31	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	22 NPO		NPO-SI 22	TCZ-20	C10Q22C	CCTO-220	CNO-422	10TCC-Q22
C33	.1 125V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C34	6800		SI 6800	D6-682	BYA10D68	CCD-682	B-268	5HK-D68
C35	22 NPO		NPO-SI 22	TCZ-22	C10Q22C	CCTO-220	CNO-422	10TCC-Q22
C36	.1 125V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C37	2200		SI 2200	D6-222	BYA10D22	CCD-222	B-222	5HK-D22
C38	.047 125V		P288N-047	DD-503	CUB2S47	2DP-3-473	GEM-4147	2TM-S47
C39	2200		SI 2200	D6-222	BYA10D22	CCD-222	B-222	5HK-D22
C40	.022 125V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C41	3000 10%				1R5D3	CCD-302	JL-332	10TS-D30
C42	.1 125V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C43	3900 5%				1R5D39	CM-20B-392J	MCJ462.5	MS-239
C44	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C46	.68 125V		P284CM-68		WMF2P68E		GEM-6068	2WF-P68
C47	2200		SI 2200	D6-222	BYA10D22	CCD-222	B-222	5HK-D22

AF AMP PRINTED BOARD





CONVERTER PRINTED BOARD

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	NORELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	20K 4500Ω Tap	½						Volume
R2	500Ω	1/4						Bias

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	10K				R23	10Ω			
R4	2200Ω				R24	5600Ω			
R5	2700Ω				R25	8200Ω			
R6	1500Ω				R26	1500Ω			
R7	39Ω				R27	1200Ω			
R8	10K				R28	270Ω			
R9	180K				R29	3300Ω			
R10	680Ω				R30	3300Ω			
R11	22K				R31	1500Ω			
R12	3900Ω				R32	47Ω			
R13	1000Ω				R33	12Ω			
R14	15K				R34	12Ω			
R15	390Ω				R35	39Ω			
R16	330K				R36	1500Ω			
R17	1meg				R37	47Ω			
R18	2200Ω				R38	12Ω			
R19	1500Ω				R39	12Ω			
R20	12K				R40	220Ω			
R21	33K				R41	22K			
R22	1200Ω								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		NORELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	SW1-SW2 Loop Ant.						
L2	SW1 Ant. Trans.						
L3	SW2 Ant. Trans.						
L4A	SW3 Loopstick						
B	MW Loopstick						
L5	SW1-SW2 Osc.						
L6	SW3 Osc.						
L7	MW Osc.						
L8	1st IF						
L9	2nd IF						
L10	3rd IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	NORELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.8	1	A3162110					
		SEC. 2 1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	NORELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	26Ω	24-26Ω CT	A315432					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	NORELCO PART No.	QUAM PART No.	
SP1	5"	PM	24-26Ω		5A1RZ25	

BATTERIES

ITEM No.	VOLTAGE	NORELCO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			230		A100		M-13R	6 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		NORELCO PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	OA79			1N295	1N295	Overload (Pigtail)
M3	OA79			1N295	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	NORELCO PART No.	NOTES
M4	Tuning Cap.		2 Gang
M5	Switch		Function (Pushbutton Type)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

DIAL CORD STRINGING

PHOTOFACT® Folder

**PHILCO MODELS
J-1525, J-1626**

PHILCO MODELS
J-1525, J-1626

MODEL J-1525

PHILCO MODELS
J-1525, J-1626

TRADE NAME	Philco Models J-1525, J-1626 (Code 121)
MANUFACTURER	Philco Corp., Tioga & C Streets, Philadelphia, Pa.
TYPE SET	AC Operated 4 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 46 Watts, .55 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER M46 – SEE SIMILAR V-M 1201 – PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

SET 545 FOLDER 13

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KT659

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Left Channel AF Amp.	12AU6
V2	Left Channel Output	7695
V3	Right Channel AF Amp.	12AU6
V4	Right Channel Output	7695

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲425	150	30-2568-80					TVLS-3454. 2*	
B	■40	150							
C	▲20	150							
C2	10	25	30-2417-49	PRS1250	BBR10-25	TC22	TD-10-25	TVA-1204	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.0022 200V		P288N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C4	.0068 400V		P488N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6268	6TM-D68
C5	.047 600V		P688N-047	DD-503	CUB4S47	6DP-3-473	GEM-6147	6TM-S47
C6	.022 600V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C7	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C8	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C9	.0022 200V		P288N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C10	.22 400V		P488N-22		CUB4P22	4DP-3-224	GEM-4022	4TM-P22
C11	.0068 400V		P488N-0068	D6-682	CUB6D68	6DP-1-682	GEM-6268	6TM-D68
C12	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C13	.022 600V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C14	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	33-5573-49	BT-175				Loudness, Left Channel
	1meg Tap			*				
B	2meg	½		STR-175				Loudness, Right Channel
	1meg Tap			*				
R2A	4meg	½	33-5573-56	B-85				Bass, Left Channel
B	4meg	½		SR-85				Bass, Right Channel
R3A	500K	½	33-5573-50	B-60	AD47-500K-2		FA55A	Treble, Left Channel
B	500K	½		SR-60	Not Req.		RU55A	Treble, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R4A	4meg	½	33-5587-37	B-86	A47-4meg-S	B11-240	U87	Balance
B	Shaft			Not Req.	FS-3	SK1	Not Req.	

* Use 1meg Tap.

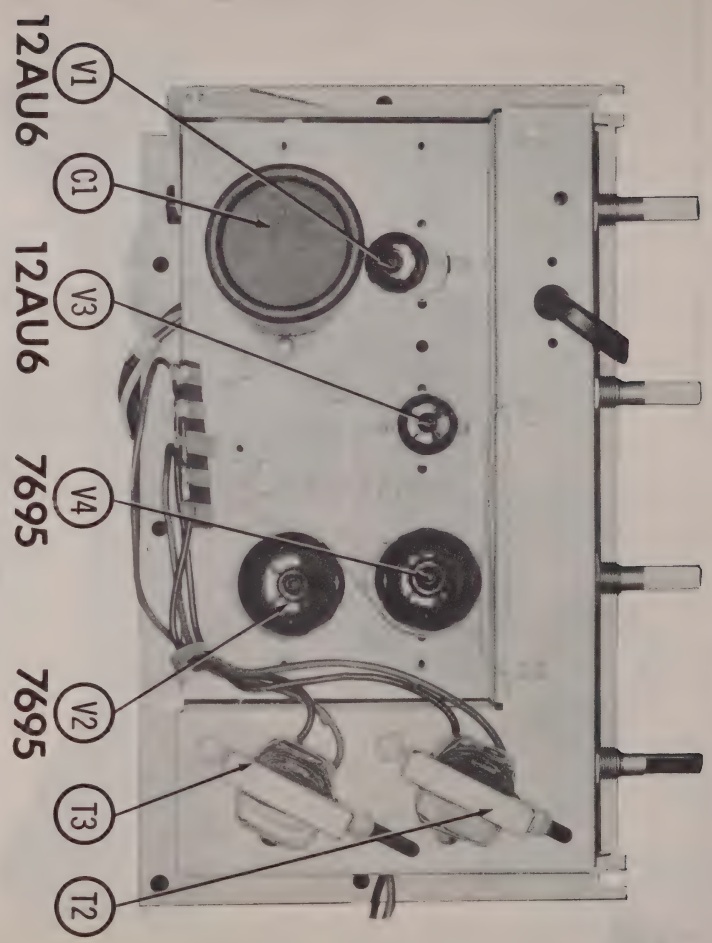
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	REPLACEMENT DATA WORKMAN TV PART No.	REMARKS
R5	47K			
R6	68K			
R7	100K			
R8	68K			
R9	1000Ω			
R10	100K			
R11	1000Ω 1W			
R12	47K			
R13	68K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	REPLACEMENT DATA WORKMAN TV PART No.	REMARKS
R14	100K			
R15	100K			
R16	1000Ω 1W			
R17	1000Ω			
R18	2200Ω 1W			
R19	12Ω 3W	PW5-12	5W-SQ-12	
R20	100Ω 2W			
R21	100Ω 2W			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	900Ω CT	12-16Ω	32-8957-1					
T2	1100Ω	6-8Ω	32-8958-1					
T3	1100Ω	6-8Ω	32-8958-1					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	4"	PM	6-8Ω	36-1673-19	4A07Z8	* Alternate Part #36-1651-30. Model J-1525.
SP2	8"	PM	6-8Ω	36-1651-31*	8A21PA	† Alternate Part #36-1651-30. Model J-1626.
SP3	8"	PM	6-8Ω	36-1651-31*	8A21PA	
SP4	4"	PM	6-8Ω	36-1673-19	4A07Z8	
	6"	PM		36-1680-8 †		

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	PHILCO PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.090A	34-8048-2	1N1763	2F4	SR200	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	PHILCO PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2	325-8039	Not Req.	13T	Not Req.	13	Not Req.	10TB2-S	Not Req.	

CABINETS & CABINET PARTS

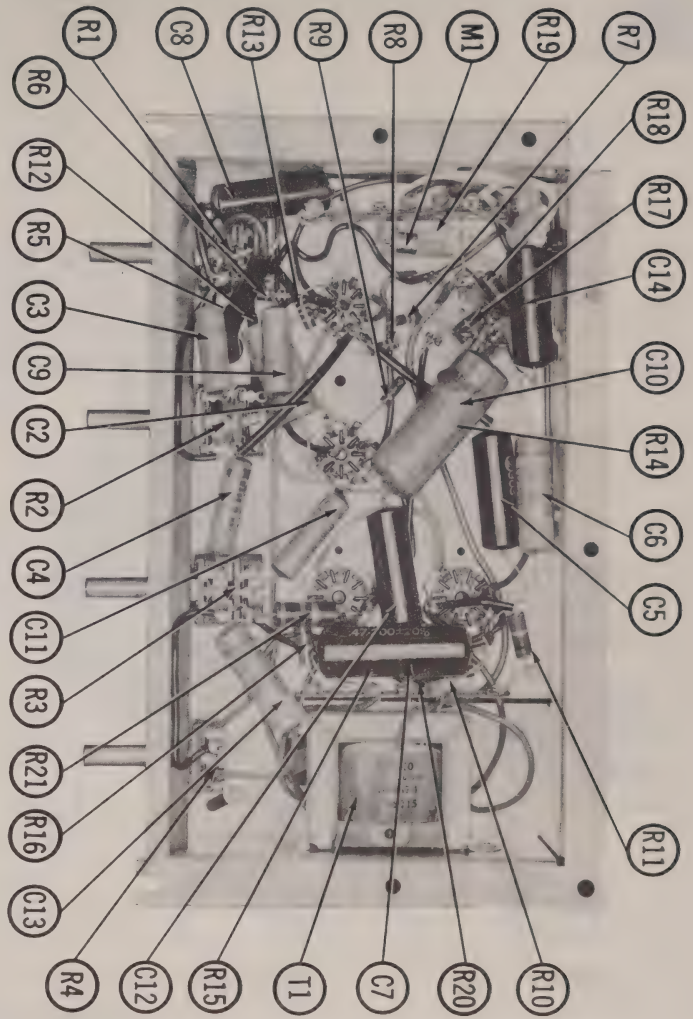
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

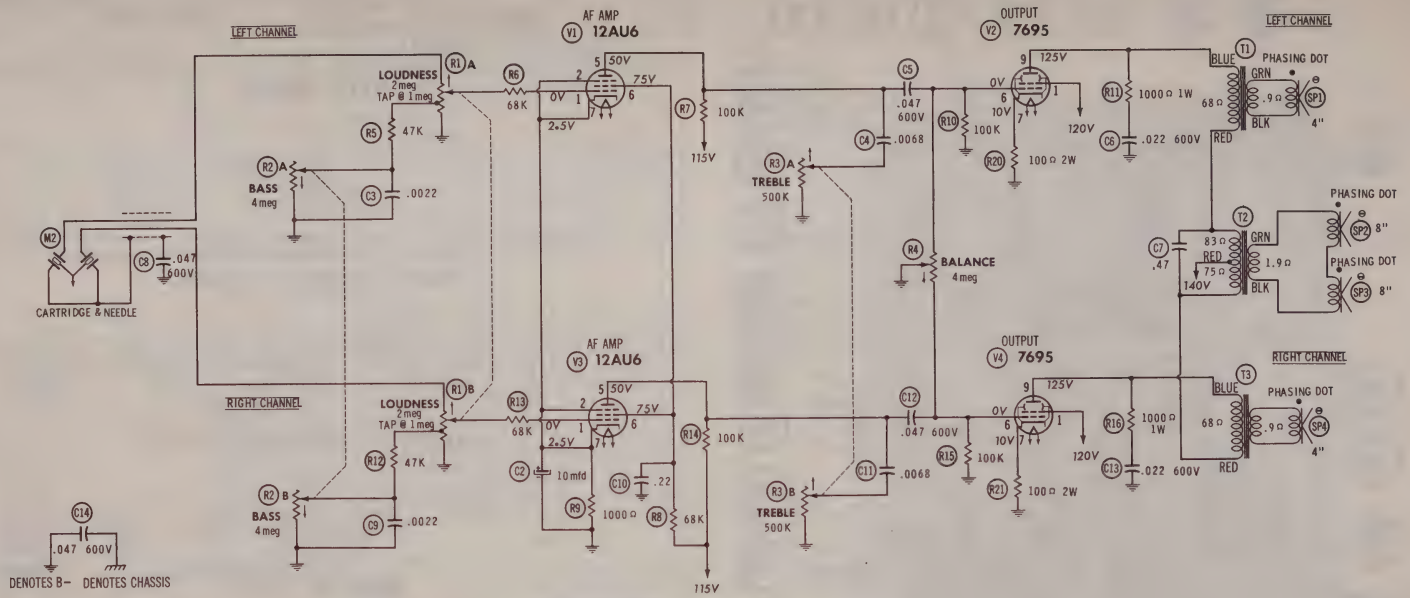
NAME	PART NO.	DESCRIPTION
Knob	54-5874-1	4 Used, Model J-1525
Knob	424-8176	4 Used, Model J-1626
Cabinet	51-0147-1	Model J-1525
Handle	54-5211-21	Model J-1525

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AU6	68K	1000Ω	15Ω	0Ω	†100K	†70K	1000Ω		
V2	7695	†2200Ω	NC	NC	120Ω	80Ω	90K	100Ω	NC	†163Ω
V3	12AU6	68K	1000Ω	30Ω	15Ω	†100K	†70K	1000Ω		
V4	7695	†2200Ω	NC	NC	80Ω	30Ω	90K	100Ω	NC	†155Ω

† MEASURED FROM OUTPUT OF M1. NC NO CONNECTION

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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PHILCO MODELS J-1525, J-1626

PHOTOFACT® Folder

RCA VICTOR MODELS
RP-215-1, RP-216-1

RCA VICTOR MODELS
RP-215-1, RP-216-1

RCA VICTOR MODELS
RP-215-1, RP-216-1

GENERAL INFORMATION

The RCA Victor RP-215-1 and RP-216-1 are four speed changers designed to play a stack of 7", 10", or 12" records, or 10" and 12" records intermixed, providing they are of the same speed, and shut off automatically after the last record has been played.

The velocity type tripping method is used in these changers.

Up to fifteen 7", twelve 10", ten 12" or ten 10" and 12" intermixed records may be placed on the spindle at one time.

Manufactured By:

Radio Corporation of America
RCA Victor Home Instruments Division
Indianapolis 1, Indiana

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of CQ494

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PREPARING FOR OPERATION

The changer must be floating freely on its mounting springs before placing in operation. Remove any cardboard which may be used during shipping and level the changer.

OPERATING INSTRUCTIONS

1. Release the tone arm from the tone arm rest.
2. Raise the record balance arm and turn away from the spindle until it locks in open position.
3. Place a stack of 7", 10", or 12" records on the spindle.
4. Hold the records in place and swing the record balance arm over to the spindle and lower it onto the records.
5. Select the correct stylus for the records being played.
6. Turn the speed control to the speed that corresponds to the type records to be played, 16, 33, 45, or 78 rpm.
7. Turn the On-Off-Reject control to reject position and release. Each record in the stack will play and automatically change until the last record is played, at which time, the tone arm returns to its rest position and the changer will automatically shut off.
8. Lift the record balance arm up and swing it away from the spindle until it locks in the open position to remove the records.

NOTE: When the changer is not in use, place the speed selector control in the neutral position.

CHANGE CYCLE

When the On-Off-Rej knob (15) is pushed to the "On" position, it actuates On-Off-Rej Link (26) and On-Off-Rej Actuating Arm (28) which in turn actuates the on-off switch and applies power to the motor. Push the On-Off-Rej knob (15) to the "Rej" position and release. This action places a force against engagement pawl actuating lever (61) through a wire connected to On-Off-Rej actuating arm (28). This force causes engagement pawl actuating lever (61) to contact and move the engagement pawl on the cycling gear (87) so it will contact the projection on the turntable hub. As the turntable rotates, the projection on the hub strikes the engagement pawl and moves the cycling gear (87) so the teeth on the turntable hub and cycling gear will mesh.

The stud, mounted on the bottom of the cycling gear (87), extends through the elongated slot of the cycling slide (59) and forces it outward from the spindle as the cycling gear (87) rotates.

The pickup arm lift rod (39) rides up the incline portion of the cycling slide (59), forcing the lift rod (39) up against the height adjustment screw causing the tone arm to rise as the cycling slide (59) moves outward.

The pickup arm return lever (67) rotates to push the pickup arm in for setdown when the mechanism begins to go through a change cycle when a stack of records is on the spindle. Therefore the automatic stop mechanism is not actuated.

As the cycling gear (87) rotates, the trip pawl slides over the edge of a metal tab and resets the trip pawl to prevent the mechanism from tripping continuously.

As the cycling slide (59) continues to move, contact is made between the spring wire attached to the cycling slide (59), and the bottom stud on the pickup arm pivot lever (72). This action rotates the pickup arm pivot lever (72) and starts the pickup arm on its outward travel. At this time, the upper stud of pickup arm pivot lever (72) slides over the latch and locks the pickup arm return lever (67) to the pickup arm pivot lever (72). This locked condition causes them to rotate as a unit against the force applied by the pickup arm return spring (68).

When the cycling slide (59) approaches the end of its outward travel, the stud mounted on the cycling slide contacts actuating lever (51) and unlatches latch release lever (49).

When the cycling slide (59) reaches the end of its outward travel, one end of the pickup arm pivot lever (72) is positioned against the stud extending from the bottom side of the motor board. The stud on the other end of the lever remains against the wire takeup spring on the cycling slide (59).

The pickup arm pivot lever (72) is held in this position as the records drop to the turntable. It is necessary for the pickup arm pivot lever (72) and pickup return arm lever (67) to be coupled together as the pickup arm moves in to set down on the record to prevent erratic setdown.

Before the cycling slide (59) reaches its mid-cycle position, a tab on the bottom of the cycling slide (59) contacts and pushes the spindle operating arm (92).

The lower end of the record push-off finger extends through a hole in the spindle operating arm (92) and moves with the spindle operating arm. The push-off finger pivots on a pin driven through the spindle. The upper end moves in a direction that will push a record off the spindle shelf and drop the record to the turntable. The spindle retainer blocks the next record and prevents it from dropping onto the turntable.

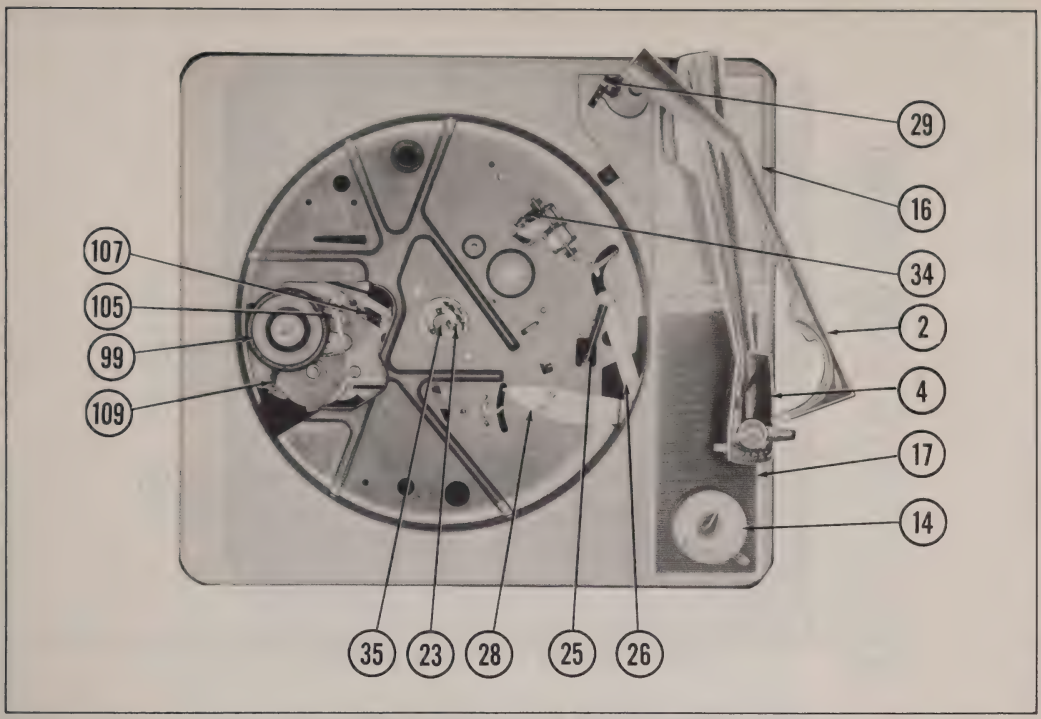


FIG. 1 TOP VIEW OF MECHANISM WITH TURNTABLE REMOVED

During the last half of the change cycle, the wire spring attached to the cycling slide (59) moves away from bottom stud on the pickup arm pivot lever (72). This permits the pickup arm pivot lever (72) and pickup arm return lever (67) to direct the inward movement of the pickup arm.

The pickup arm pivot lever (72) follows the return travel of the cycling slide (59) due to the pickup arm return spring (68). The pickup arm moves inward until the set down lever (64) blocks the pickup arm return lever (67). The set down lever (64) then contacts one of the three steps in the pickup arm return lever (67) for either a 7", 10", or 12" record.

The top stud on the pickup arm return lever (67) moves away, permitting the shut-off link spring (45) to raise the end of the switch link shut-off assembly so it will clear the escape lever as the pickup arm return lever (67) moves the pickup arm. This is done so the switch is not actuated to stop the motor.

The cycling slide (59) has advanced far enough when the pickup arm is above the set down position, so the pickup arm lift rod (39) will ride down the inclined portions of the cycling slide (59) allowing the pickup to set down on the leadin groove of the record.

The stud on the end of the cycling slide (59) contacts the end of the actuating lever (70) and unlocks the pickup arm pivot lever (72) from the pickup arm return spring (68) just before the pickup arm sets down on the record.

The stud on the end of the cycling slide (59) carries the actuating lever (70) far enough the remainder of its travel so the pickup arm return lever (67) is pulled away from the set down selector lever (64). The top stud on the pickup arm return lever (67) is then locked to the pickup arm latch (47) and remains locked throughout the playing cycle.

Trip slide (77) is pulled back into position for the next tripping by a stud on top of the cycling gear (87) as it completes its cycle.

Trip slide (77) is moved outward from the spindle by the pickup arm pivot lever (72) as a record plays and the pickup arm moves inward. The trip pawl is contacted by the trip slide (59) through a friction clutch and moves the engagement pawl on the cycling gear (87).

The sloped side of the engagement pawl lightly contacts the turntable hub projection as the pickup arm moves in while a record is playing. The engagement pawl is moved back by each rotation of the turntable hub until the pickup arm enters the lead-out grooves, at which time, positive contact is made between the engagement pawl and the turntable hub. This contact rotates the cycling gear (87) so the teeth of the turntable hub engages with the teeth of the cycling gear (87). This action starts the change cycle.

The trip pawl is reset by a tab on the bottom of the motorboard as the mechanism goes through the change cycle. This prevents the changer from recycling without playing the record that has dropped onto the turntable.

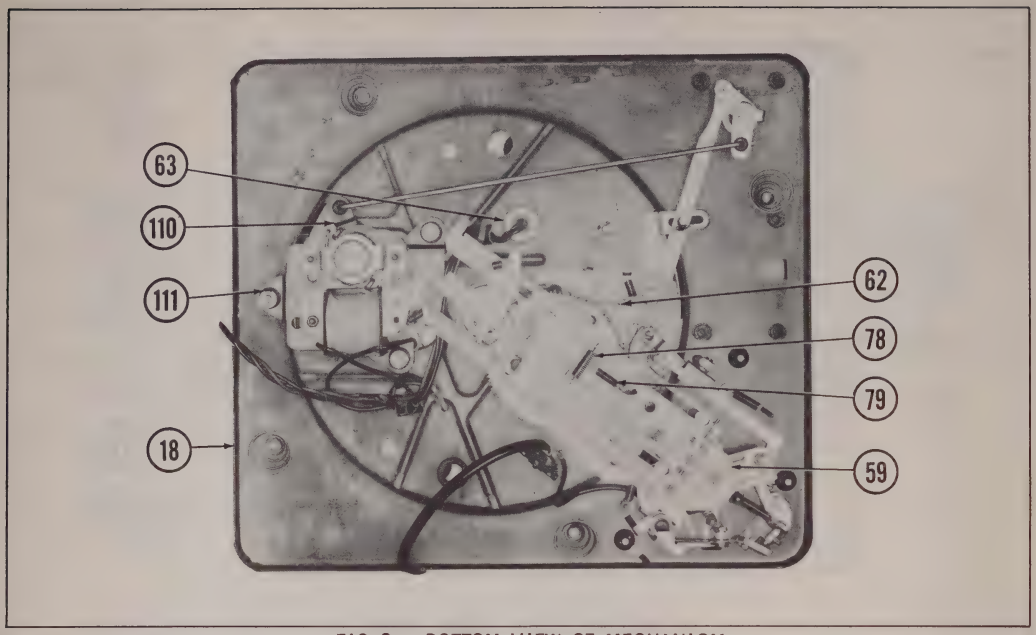


FIG.2 BOTTOM VIEW OF MECHANISM

When a 7" record is being dropped, the tab end of the 10" indexing lever (65) drops down into a depression in the cycling gear (87). This pushes the set-down selector lever (64) up as far as it will go. The pickup arm return lever (67) will then make contact on the upper step of the set-down selector lever (64). The pickup arm will set down on the lead-in groove of a 7" record.

When a 10" record is being dropped, the cushion end of the indexing lever (65) is prevented from rising. The set-down selector lever (64) rests on the vertical tab of the indexing lever (65) causing the set-down selector lever (64) to contact the second step of the pickup arm return lever (67).

When a 12" record drops, the edge of the record strikes the 12" indexing lever (29) and causes the other end to rotate indexing lever (65) enough so the set-down selector lever (64) will drop off the vertical tab and land on the horizontal tab of the indexing lever (65). It will then make contact with the lower step of the pickup arm return lever (67) and stop the pickup arm on its inward travel so the pickup arm will set down on the lead-in groove of a 12" record.

Intermixing of 10" and 12" records is accomplished by a cam located on the hub of the cycling gear (87) which provides a means of raising the set-down selector (64) to the top of the vertical tab on the indexing lever (65) so the setdown will automatically return the mechanism to the 10" set-down position.

When the last record of the stack drops to the turntable, the record balance arm (2) drops and actuates the shut-off lever (56) by the force applied through spring (57). The knobbed end of the stud on the cycling slide (59) prevents the latch release lever (49) from being forced upward at this time. Latch release lever (49) and pickup arm latch release lever (51) have been moved by the stud on the cycling slide (59) and disengages the latch lever (47). The latch release lever (51) is raised by the last record shut-off intermediate lever (55) when the cycling slide (59) starts its return travel.

The mechanism goes into the change cycle after the last record is played. When the cycling slide (59) approaches the end of its outward travel, the knobbed end of the stud on the cycling slide (59) slides underneath and does not contact the pickup arm release lever (51); thus, the latch release lever (49) and the pickup arm return lever (67) remains locked and the pickup arm cannot move inward.

As the cycling slide (59) continues, the pickup arm remains above its rest post and the pickup arm lift rod (39) rides down the inclined portions of the cycling slide so the pickup arm will set down on its rest post. Just before the pickup arm sets down on its rest post, the stud on the end of the cycling slide (59) actuates the actuating lever (70), unlocking the pickup arm pivot lever (72) from the pickup arm return lever (67).

As the stud on the pickup arm return lever (67) moves away from the lever on the end of the switch link shut-off, the tab on the other end of the switch link shut-off is pulled up by tension spring (45). This permits the slide escape lever to pass under the tab on the switch while the cycling slide (59) is returning to its normal position.

When the pickup arm return lever is locked, the shut-off lever (56) is held so the tab is down and the slide escape lever is pushed against the tab when the cycling slide (59) passes it. This motion is transferred

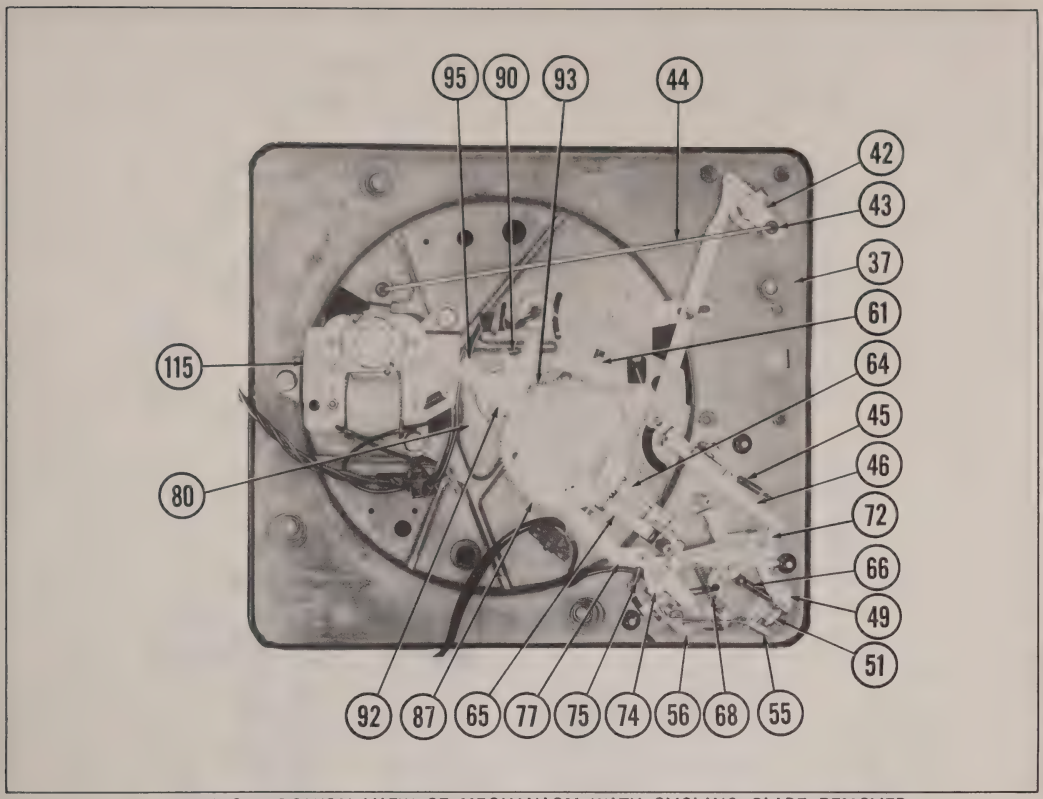


FIG.3 BOTTOM VIEW OF MECHANISM WITH CYCLING SLIDE REMOVED

to the On-Off-Rej link (26) and actuates the on-off switch to remove the power from the motor when these two points meet.

CLEANING

Clean the inside rim of the turntable, idler wheel (99), and motor spindle free of oil or grease. Use a good solvent to clean these parts.

LUBRICATION

Use a light oil on the record balance arm (2) shaft, motor bearings, and pickup arm lift rod (39). On all other bearings use a heavy oil sparingly. Use a clinging type grease on all sliding parts.

ADJUSTMENTS

Set Down

Adjustment is made by means of the set-down adjusting screw (24) which is located on the left side of the pickup arm support bracket. When making this adjustment, use a 12" record. The setdown for 10" and 7" records will then be correct. Adjust as follows:

1. Raise and turn the record balance arm out.
2. Disconnect the power cord from the wall outlet.
3. Place a 12" record onto the turntable.
4. Turn the control knob to "Rej" and rotate the turntable by hand.
5. Hold the 12" indexing lever (29) back during mid-cycle and then release and rotate the turntable until the stylus is ready to set down on the record.

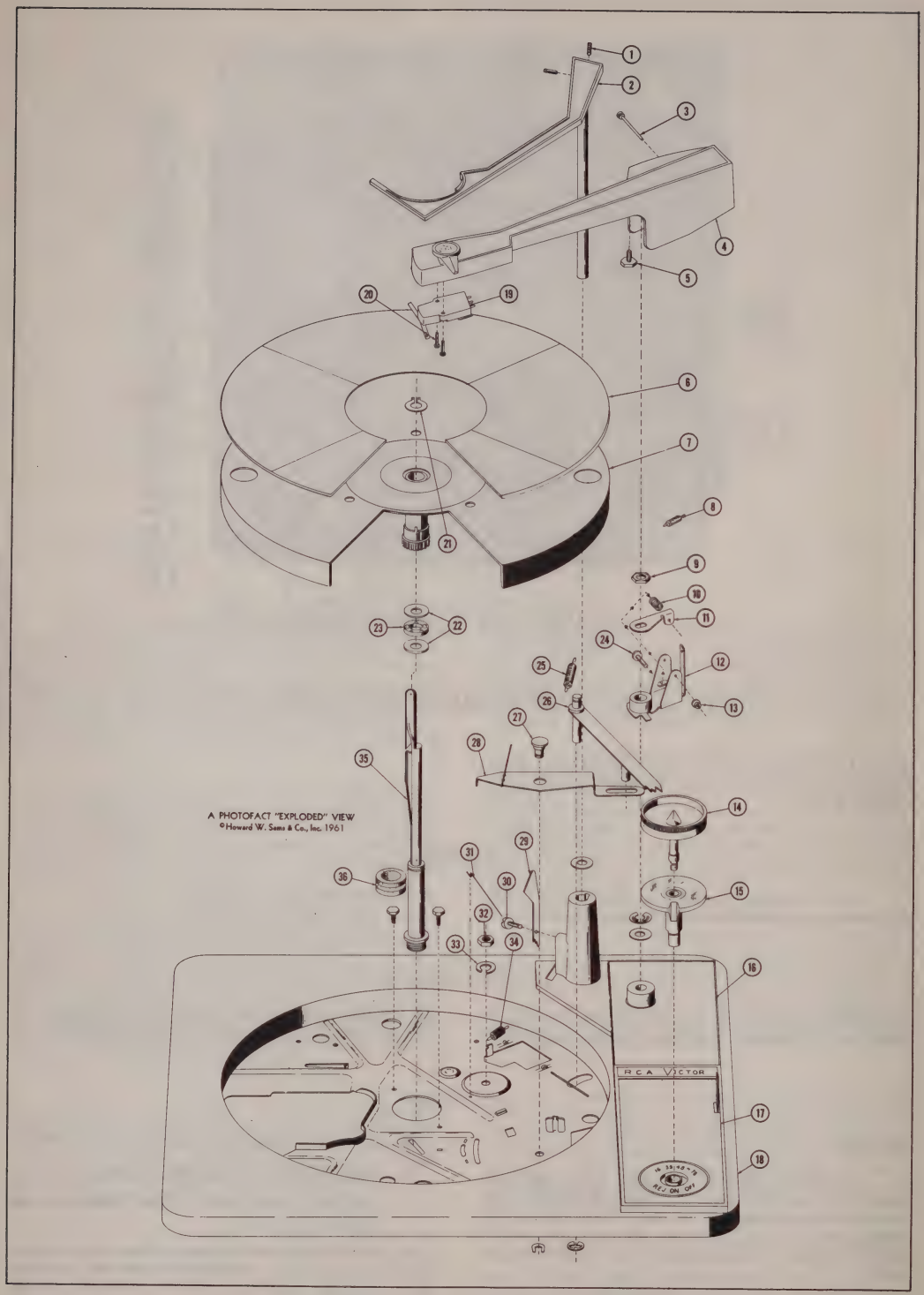


FIG.4A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

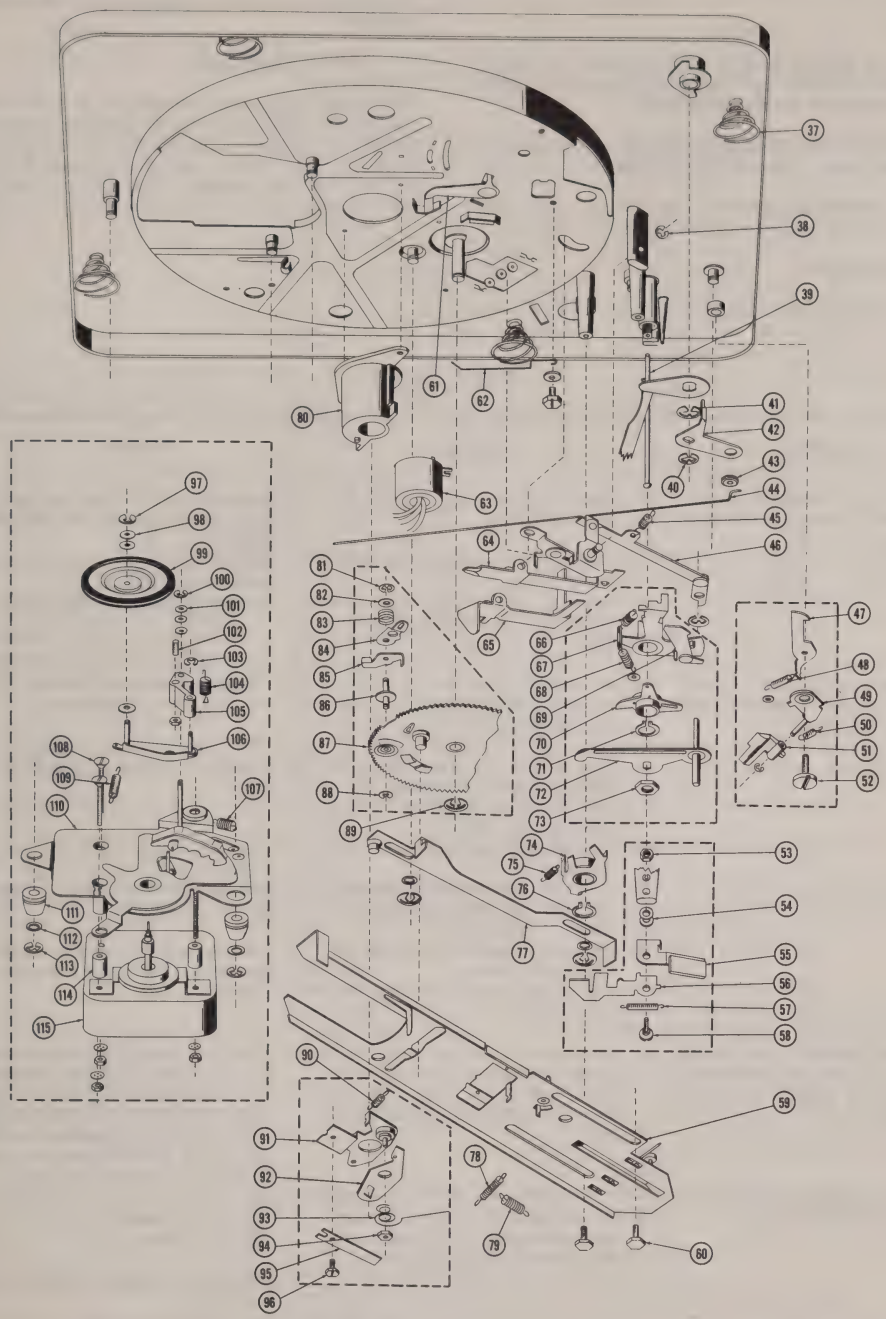


FIG. 4B EXPLODED VIEW OF PARTS BELOW BASEPLATE

6. Turn adjusting screw (24) so the stylus will set down mid-way of the lead-in groove.

Height

1. Turn control knob to "Rej" position and rotate the turntable by hand until the tone arm has reached its maximum height.
2. Measure the distance between the stylus and the turntable. It should be 1 3/8 inches.
3. If adjustment is needed, turn height adjustment screw (5) until the correct height is obtained.

Stylus Pressure

The stylus pressure is set for 4 to 7 grams. To set for the correct pressure, bend the mounting bracket arm toward the pickup to increase the pressure and toward the rear of the pickup arm to decrease the pressure.

7" - 10" Indexing Lever

There should be a clearance of 3/32" between the rubber tip of the 7" and 10" indexing lever (65) and a 10" or 12" record on the turntable when in the out of cycle position. If the clearance exceeds 3/32", add one or more flat washers .250" O.D. x .144" I.D. x .024" thick under the rubber tip.

TROUBLE CHART

Symptom	Cause	Remedy
Motor does not shut off after the last record has been played.	1. End of On-Off-Rej. actuating arm (28) bent. 2. Shut-off lever spring (45) weak or unhooked. 3. Shut-off lever (56) unhooked from stud on On-Off-Rej link (26).	1. Reform On-Off-Rej actuating arm (28) so it contacts the On-Off switch properly. 2. Rehook or replace the shut-off lever spring (45). 3. Rehook the shut-off lever (26).
Pickup arm fails to set down on its rest post after playing the last record.	1. Pickup arm lock nut (9) loose. 2. Set down adjustment not properly adjusted.	1. Tighten pickup arm lock nut (9). 2. See "Set Down Adjustment".
Will not stop automatically.	1. End of shut off lever (56) bent and not raising actuating lever (70) to clear stud on end of cycling slide (59). 2. Pivot in the shut off lever (56) binding. 3. Latch release lever (49) binding in pivot or return spring (50) weak or missing. 4. Record balance arm shaft (2) binding in sleeve. 5. Tab on last record shut-off link may be bent.	1. Straighten the end of shut off lever (56). 2. Clean pivot and apply a thin coat of good oil. 3. Clean latch release lever. Replace return spring (50). 4. Clean record balance arm shaft (2) and apply a thin coat of good oil. 5. Straighten tab.
Pickup arm sets down on its rest post and changer shuts off before playing the last record.	1. Last record shut off lever (55) holds pickup arm latch release lever (49) up so it will not contact the stud on the cycling slide (59).	1. Clean the pivot of the last record shut off lever (55) so the pickup arm latch release lever (49) will contact the stud on the cycling slide (59) so the pickup arm return lever (67) will unlatch from the latch release lever (49).
Erratic speed change.	1. Speed selector lever (42) bent and not making sufficient travel for a complete speed change. 2. Speed control rod (44) bent.	1. Straighten speed selector lever (42) or replace. 2. Straighten or replace speed control rod (44).
Changer stalls in cycle.	1. Cycling slide (59) worn and wedging. 2. Teeth in cycling gear (87) or hub on turntable (7) worn or broken.	1. Replace cycling slide (59). 2. Replace cycling gear (87) or turntable (7).

Symptom	Cause	Remedy
	3. Slots in the cycling slide (59) bent and wedging on the mounting stud.	3. Straighten the slots so they will slide freely.
	4. 10" indexing lever (65) bent and jamming the cycling gear (87).	4. Straighten or replace the 10" indexing lever (65).
Reject control does not function.	1. Trip pawl on wrong side of trip slide lever (77).	1. Reposition the trip pawl.
	2. Spring (25) weak or missing.	2. Replace spring (25).
	3. Wiring on On-Off-Rej actuating arm (28) bent and not actuating the engagement pawl lever (61).	3. Straighten wire on On-Off-Reject-uating arm (28).
	4. Vertical tab on engagement pawl bent.	4. Straighten the tab or replace cycling gear (87).
Records on the spindle do not separate properly.	1. Spindle (35) bent.	1. Replace spindle (35).
	2. Vertical tab on cycling slide (59) bent.	2. Straighten vertical tab.
	3. Last record shut-off link spring (90) weak or broken.	3. Replace last record shut-off link spring (90).
	4. Spindle retainer does not go far enough down to hold the second record.	4. Clean any foreign material out of slide. If bent, replace spindle (35).
	5. Push-off finger binding.	5. Clean the push-off finger pivot. If push-off finger is worn at the pivot or bent, replace spindle (35).
Goes into a change cycle before record is played through.	1. Trip slide (77) may be bent on the ends.	1. Straighten trip slide (77).
	2. Accumulation of grease gumming the clutch of trip pawl intermediate lever (85).	2. Clean the accumulation of grease from clutch and re-lubricate.
	3. Edge of engagement pawl defective.	3. Replace cycling gear (87).
Speed variation.	1. Detent spring (109) weak or broken.	1. Replace detent spring (109).
	2. Idler link spring (107) weak or broken.	2. Replace idler link spring (107).
	3. Turntable bearing worn or oil or grease on inner rim of turntable.	3. Replace turntable bearing. Clean oil or grease from turntable rim with a good solvent.
	4. Oil film on idler wheel (99) or motor shaft.	4. Clean with a good solvent.
	5. Detent plate bent.	5. Straighten detent plate.
	6. Idler link (105) out of adjustment.	6. Adjust the idler link adjusting screw so the idler wheel (99) will make perfect contact with step on the motor shaft.
Skips grooves in record as pickup arm moves in.	1. Worn, broken, or improperly selected stylus.	1. If stylus is worn or broken, replace. Make sure the stylus corresponds to the type record being played.
	2. Pickup arm lift rod (39) binding.	2. If pickup arm lift rod (39) is bent, replace. If dirty, clean and lubricate.
	3. Burrs on the trip slide (77).	3. Remove burrs.
	4. Trip slide (77) bent and binding on the studs.	4. Straighten trip slide (77).
	5. Height adjustment screw (5) misadjusted causing the needle to skip grooves on the first record on the turntable.	5. See "Height Adjustment".

Symptom	Cause	Remedy
Will not trip automatically.	1. Trip pawl may slide under edge of tab on motor board.	1. Check tab on motor board to see if it is bent. Check trip pawl to see if it is bent.
	2. Trip slide (77) binding on studs.	2. Check trip slide (77) to see if it is straight.
	3. End of trip slide (77) bent out.	3. End of trip slide (77) must be bent down so the pickup arm return lever (67) will carry it in to trip the mechanism.
	4. End of trip pawl bent back.	4. Bend the end of the trip pawl so it will engage the projection on the turntable.
	5. Tab on trip pawl worn.	5. Replace cycling gear (87).
Pickup does not set down properly on the records.	1. Spring (68) loose or missing.	1. Replace spring (68).
	2. Spring (66) loose or missing.	2. Replace spring (66).
	3. Lock nut (9) loose.	3. Tighten lock nut (9).
	4. Pickup arm shaft binding.	4. Clean shaft and lubricate.
	5. Set down selector lever (64) bent.	5. Straighten or replace.
Pickup sets down in 7" position when playing a 10" or 12" record.	1. Rubber tip on 10" indexing lever (65) too low.	1. See "7"-10" Indexing Lever" adjustment.
Pickup sets down in 10" position when playing 7" records.	1. Tab on indexing lever (74) bent or spring (34) weak or missing.	1. Straighten the indexing lever (74) or replace spring (34).
Pickup sets down in 10" position when playing 12" records.	1. 12" indexing lever (29) bent prevent record indexing lever (74) from moving.	1. Straighten the 12" indexing lever (29) so the record indexing lever (74) will move freely.
Pickup sets down in 12" position when playing 10" records.	1. 12" indexing lever (29) binding in its pivot.	1. If the pivot is worn, replace. Replace the 12" indexing lever (29) if it is worn.
Mechanism trips continuously.	1. Stud on bottom of cycling gear (87) loose.	1. Replace cycling gear (87).
	2. Tab on motor board bent and is not contacting the trip pawl to reset it.	2. Bend the tab so the trip pawl engages it on each revolution and is reset.
	3. Trip pawl gummed with grease.	3. Clean trip pawl and relubricate.
	4. Spring (93) loose, bent, or missing preventing the stud on the cycling gear (87) from seating in the notch of the cycling slide (59).	4. If loose, tighten. If bent, straighten. If missing, replace.
	5. On-Off-Rej actuating arm (28) caught on edge of on-off switch.	5. Check to see if the on-off switch is fastened properly to the motor board so the On-Off-Rej actuating arm (28) will return to its normal operating position.
	6. End of trip pawl bent out and engaging notch on turntable hub.	6. Bend the end of the trip pawl back so it will clear the notch on the turntable hub.
	7. Stud on cycling gear (87) or end of trip slide (77) bent.	7. Straighten so they will make contact so the trip slide (77) will be reset.
	8. On-Off-Rej actuating arm (28) binding on its pivot.	8. Check to see if On-Off-Rej actuating arm (28) is not bent.

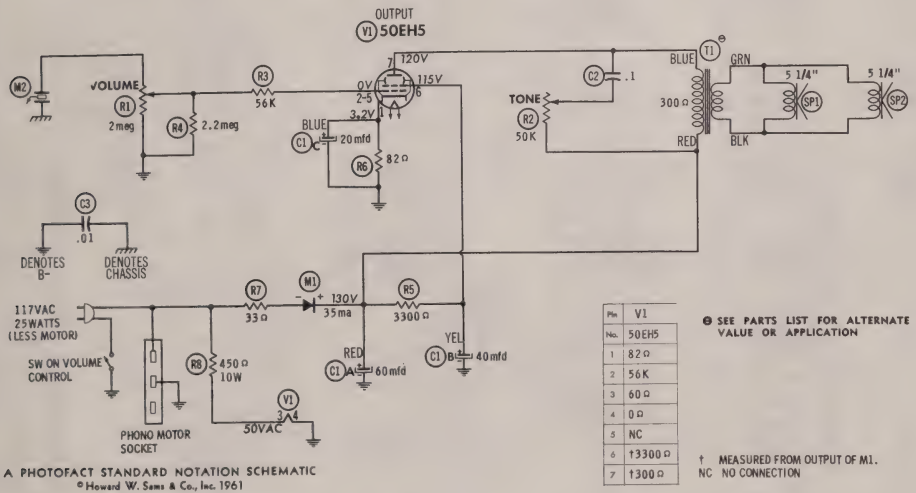
Ref No.	Part No.	Description
1	14974	#8-32 Hex Socket Set Screw-.188" Long
2	108525	Record Balance Arm - RP-215-1
	108530	Record Balance Arm - RP-216-1-2-3-4
3	108517	Pickup Arm Pivot Shaft
4	108515	Pickup Arm - RP-215-1
	108514	Pickup Arm - RP-216-1-2-3-4
5	78740	#6-32 x 3/8" Height Adjustment Screw
6	108524	Rubber Mat - RP-215-1
	108572	Rubber Mat - RP-216-1-2-3-4
7	110098	Turntable - RP-215-1
	110167	Turntable - RP-216-1-2-3-4
8	110189	Counterbalance Spring
9		Hex Nut
10	100999	Set Down Adjustment Tension Spring
11	108518	Set Down Adjustment Arm
12	108618	Pickup Arm Mounting Bracket
13	108516	Pivot Shaft Bearing
14	108466	Speed Selector Knob
15	110078	Off-On-Rej Knob
16	110072	Diecast Plate Assembly
17	110073	Control Knob Escutcheon
18	110071	Motorboard - RP-215-1
	110257	Motorboard - RP-216-1-2-3-4
19	110023	Stereo Phono Pickup
20	108537	#4-40 x 3/8" Fillister Head Machine Screw
21	78654	Turntable Retaining Ring
22	78720	Flat Metal Washer .685" O.D. x .140" I.D. x .024
23	78660	Thrust Bearing
24	110097	#6-32 x 5/8" Set Down Adj. Screw
25	108828	Spring
26	108829	Off-On-Rej Link
27	75748	Mounting Stud
28	110081	Off-On-Rej Actuating Arm
29	108460	12" Indexing Lever
30	108534	#6-32 Shoulder Type Screw
31	110089	Spring
32	103402	1/4" - 32" Hex Nut
33		1/4" Split Lockwasher
34	78709	Spring
35	79242A	Spindle
36		Grommet
37	110176	Mounting Spring
38		Retaining Ring
39	110088	Pickup Arm Lift Rod
40	35969	"C" Type Retaining Ring
41	76221	"C" Type Retaining Ring
42	108831	Speed Selector Lever
43	106620	Grommet - 11/32" O.D. x 1/8" I.D.
44	110086	Speed Control Rod
45	110101	Spring
46	110079	Last Record Shut Off Link
47	110084	Pickup Arm Latch
48	78698	Spring
49	110083	Latch Release Lever
50	100987	Spring
51	108735	Actuating Lever for Pickup Arm Latch Release.
52	110093	#6-32 Shoulder Screw
53		#4-40 Hex Nut
54		Washer - .312" O.D. x .113" I.D. x .015"
55	108533	Last Record Shut Off Lever
56	108449	Shut Off Lever
57	108593	Spring
58	110094	#4-40 Shoulder Screw
59	110075	Cycling Slide
60	110092	#6-32 Hex Head Screw
61		Engagement Pawl Actuating Lever
62	110190	Engagement Pawl Reset Spring
63	108457	On-Off Switch
64	108456	Set Down Selector Lever
65	108830	7" and 10" Indexing Lever
66	78713	Spring
67	108810	Pickup Arm Return Lever, RP-215-1, RP-216-1, RP-216-2
	110323	Pickup Arm Return Lever, RP-216-3-4
68	78699	Spring
69		Latch, Part of Ref. No. 68
70	78724	Actuating Lever - RP-215-1, RP-216-1
	110254	Actuating Lever - RP-216-3, RP-216-4
71	78653	Retaining Ring
72	108570	Pickup Arm Pivot Lever
73		Hex Nut
74	110080	Record Indexing Lever - RP-215-1, RP-216-1
	110255	Record Indexing Lever - RP-216-3, RP-216-4
75	78712	Spring
76	97287	Retaining Ring
77	110082	Trip Slide Lever
78	78705	Shut Off Lever Spring
79	110074	Cycling Gear Return Lever Spring
80	110085	Turntable and Spindle Support
81	78651	"C" Type Retaining Ring
82		Washer
83	78727	Trip Pawl Lever Spring
84	78725	Trip Pawl Actuating Lever
85	78726	Trip Pawl Intermediate Lever
86		Trip Pawl Pivot
87	110076	Cycling Gear
88	78651	"C" Type Retaining Ring
89	35969	"C" Type Retaining Ring
90	78711	Spring
91	108452	Spindle Mounting Bracket
92	110087	Spindle Record Drop Actuating Arm
93	110090	Spring
94		#6-32 Hex Nut
95	108568	Flat Steel Spring
96		#8 Hex Head Tapping Screw
97	103445	"C" Type Retaining Ring
98	108607	Metal Washer
99	110040	Idler Drive Wheel
100	103445	"C" Type Retaining Ring
101	108607	Metal Washer
102		Set Screw
103	103445	"C" Type Retaining Ring
104	108610	Idler Link Spring
105	108611	Idler Link
106	108612	Idler Plate
107	108613	Idler Plate Spring
108		Motor Mounting Screw
109	108614	Detent Spring
110		Motor Plate
111	75761	Motor Mounting Grommet
112	75749	Metal Washer
113	33726	"C" Retaining Ring
114		Motor Spacer
115	110039	Motor Complete

PHOTOFACT® Folder

SILVERTONE MODEL 1260
(Ch. 528.59090)

TRADE NAME	Silvertone Model 1260 (Ch. 528.59090)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC Operated One Tube Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 25 Watts, .24 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER 528.56630 OR 528.56631 – SEE SIMILAR SILVERTONE 528.57000 SERIES – PHOTOFACT SET 515 FOLDER 16



Pin No.	V1
1	82Ω
2	56K
3	60Ω
4	0Ω
5	NC
6	†3300Ω
7	†300Ω

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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SILVERTONE MODEL 1260
(Ch. 528.59090)

SILVERTONE MODEL 1260
(Ch. 528.59090)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KS650

SET 545 FOLDER 15

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆			◆ RAYTHEON ◆ SYLVANIA ◆		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Output	50EH5			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	5 1/4"	PM	6-8Ω	33-453-4	52A1Z8	
SP2	5 1/4"	PM	6-8Ω	33-453-4	52A1Z8	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	18-26-2	PRS3800	BBRT84215	TCT3119	TDLT-7	TVA-3437.1	
B	40	150							
C	20	20							

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				
	CURRENT (Measured)	SILVERTONE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.035A	86-28-3 *	1N1763 ◆	65AB *	SR200 ◆	* Selenium ◆ Silicon

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C3	.01		BPD-01	DD-103	BYA1081	CCD-103	B-110	5HK-S10

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	SILVERTONE PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2	33-312-0	83-1288* (LP)	124-TS	N8-1* &	46T	Not Req.	12TH-S	Not Req.	
		83-1338 * (78RPM)		N8-3 *					

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg	½	24-463	B-76	A47-2meg-Z	Q13-139	U55	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On
R2A	50K	½	24-461	B-32	A47-50K-Z	Q13-123	U33	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Motor	59-162	Phono Drive, Ch. 528.56630
	Motor	59-158	Phono Drive, Ch. 528.56631

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	56K				R6	82Ω			
R4	2.2meg				R7	33Ω			
R5	3300Ω				R8	450Ω 10W	PW10-450	10W-SQ-450	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52-1402-0	
Cabinet	42-140-2	
Handle	49-774	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SILVERTONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2500Ω	3-4Ω	80-138-1A ①	A-3025	A-3332	24S53	S-12X	① Alternate Part #80-138-1

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

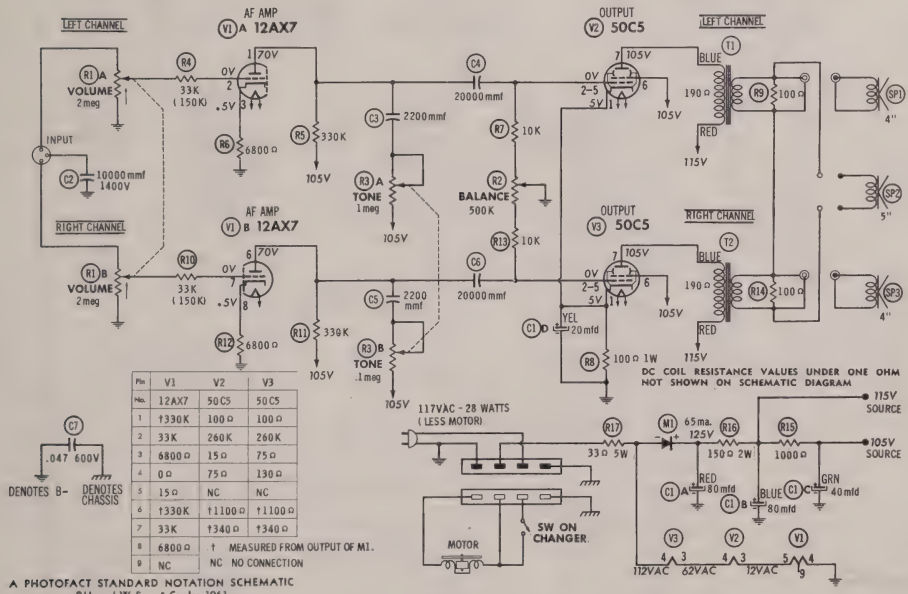
WESTINGHOUSE MODELS H-65ACS1, H-65ACS1A, H-65ACS2, H-65ACS2A, H-65ACS3 (Ch. V-2506-5)

WESTINGHOUSE MODELS H-65ACS1, H-65ACS1A, H-65ACS2, H-65ACS2A, H-65ACS3 (Ch. V-2506-5)

MODEL H-65ACS1

TRADE NAME	Westinghouse Models H-65ACS1, H-65ACS1A, H-65ACS2, H-65ACS2A, H-65ACS3 (Ch. V-2506-5)
MANUFACTURER	Westinghouse Electric Corp., Radio-Television Div., Matuchen, N. J.
TYPE SET	AC Operated 3 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 -120 Volts AC, 60 Cycles RATING 28 Watts, .3 Amp. @117 Volts AC (Less Motor) ("A" Versions are designed for 50 Cycles)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #670V008H05 (60~) or 670V008H06 (50~) — SEE SIMILAR MONARCH UA12 — PHOTOFACT SET 465 FOLDER 6 (50~ MOTOR PART #690V023H50)



Pin No.	V1 12AX7	V2 50C5	V3 50C5
1	†330K	100Ω	100Ω
2	33K	260K	260K
3	6800Ω	15Ω	75Ω
4	0Ω	75Ω	130Ω
5	15Ω	NC	NC
6	†330K	†1100Ω	†1100Ω
7	33K	†340Ω	†340Ω
8	6800Ω	† MEASURED FROM OUTPUT OF M1.	
9	NC	NC NO CONNECTION	

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KT673

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SET 545 FOLDER 16

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AX7 (7025) *	V2	Left Channel Output	50C5
			V3	Right Channel Output	50C5

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	218V025H51	PR4-450	BBRQ0789.5	TCT3U7 TC492		TVAS-4538 *	
B	80	150							
C	40	100							
D	20	25							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10000 1400V		DAC-27	DDI6-103	HVE16S1	16DP-3-103	UAC-1I0	BL-S10
C3	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C4	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C5	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C6	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-203	5HK-S20
C7	.047 600V		P688N-047	DD-503	CUB4S47	6DP-3-473	GEM-6147	6TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	270V106H02	B-76	AD47-2meg-Z		FA26A	Volume, Left Channel
B	2meg	½		SR-76	Not Req.		RU26A	Volume, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R2A	500K	½	270V106H01	B-59	A47-500K-S	Q11-133	U50	Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	1meg	½	270V062H08	B-70	AD47-1meg-Z		FA16A	Tone, Left Channel
B	1meg	½		SR-70	Not Req.		RU16A	Tone, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	33K			(150K) *
R5	330K			
R6	6800Ω			
R7	10K			
R8	100Ω 1W			
R9	100Ω			
R10	33K			(150) *

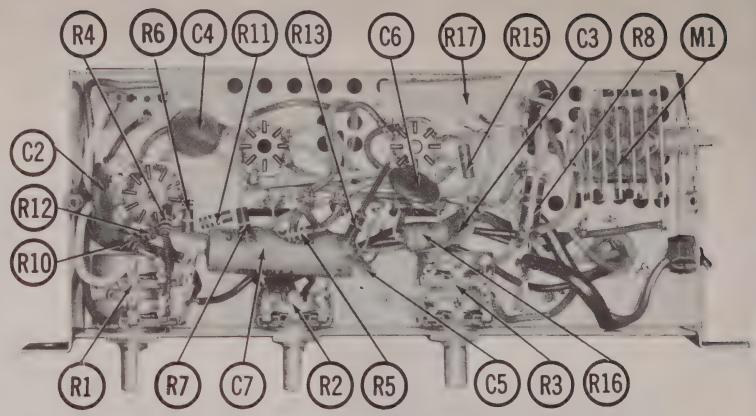
ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R11	330K			
R12	6800Ω			
R13	10K			
R14	100Ω			
R15	1000Ω			
R16	150Ω 2W			
R17	33Ω 5W	PW5-33	5W-SQ-33	

* Alternate Value.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Westinghouse PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3000Ω	3-4Ω	430V107H01		A-3332		S-16X	
T2	3000Ω	3-4Ω	430V107H01		A-3332		S-16X	

CHASSIS—BOTTOM VIEW



SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Westinghouse PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	6-8Ω	570V066H01	4A1Z8	
SP2	5"	PM	10-12Ω	570V093H01	5A07RZ12	
SP3	4"	PM	6-8Ω	570V066H01	4A1Z8	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Westinghouse PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.065A	295V015H02 ♦	1N1763*	150 ♦	SR200 *	* Silicon ♦ Selenium

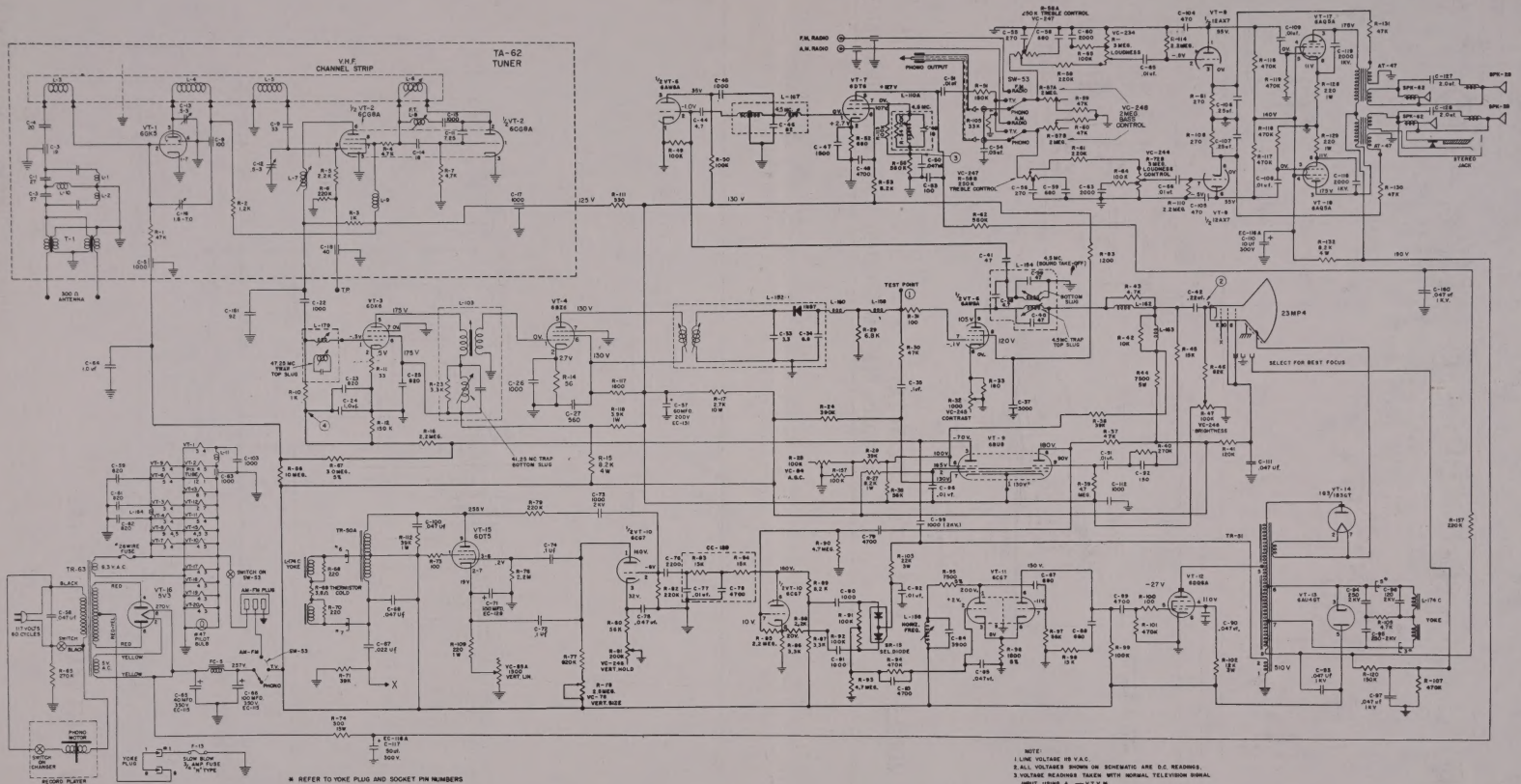
PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	Westinghouse PART No. CARTRIDGE	Westinghouse PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	671V009H02	690V014H94 * (LP) 690V021H09 * (78RPM)	86TS TB	Not Req.	96T	Not Req.	12TH-S	Not Req.	Domestic Versions
	671V001H02	Not Req.	13T	Not Req.	13	Not Req.	10T2-S	Not Req.	Export Versions (50~)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)


TA-62
TUNER
V.H.F.
CHANNEL STRIP
23MP4
SELECT FOR BEST FOCUS
TRAV-LER
RECORD PLAYER
YOKE PLUG
SWITCH ON CHANGER
SLOW BLOW 3/4 AMP FUSE "M" TYPE
* REFER TO YOKE PLUG AND SOCKET PIN NUMBERS
NOTE:
1. LINE VOLTAGE 115 V.A.C.
2. ALL VOLTAGES SHOWN ON SCHEMATIC ARE D.C. READINGS.
3. VOLTAGE READINGS TAKEN WITH NORMAL TELEVISION SIGNAL INPUT USING A — V.T.V.M.
4. A.G.C. CONTROL SET FULLY COUNTER CLOCKWISE AND ALL OTHER CONTROLS SET FOR NORMAL OPERATION.

TRAV-LER MODELS 23FMSP6195B, M, W (CH. 1062-91)

Schematic Diagram Courtesy of Trav-Ler Radio Corporation

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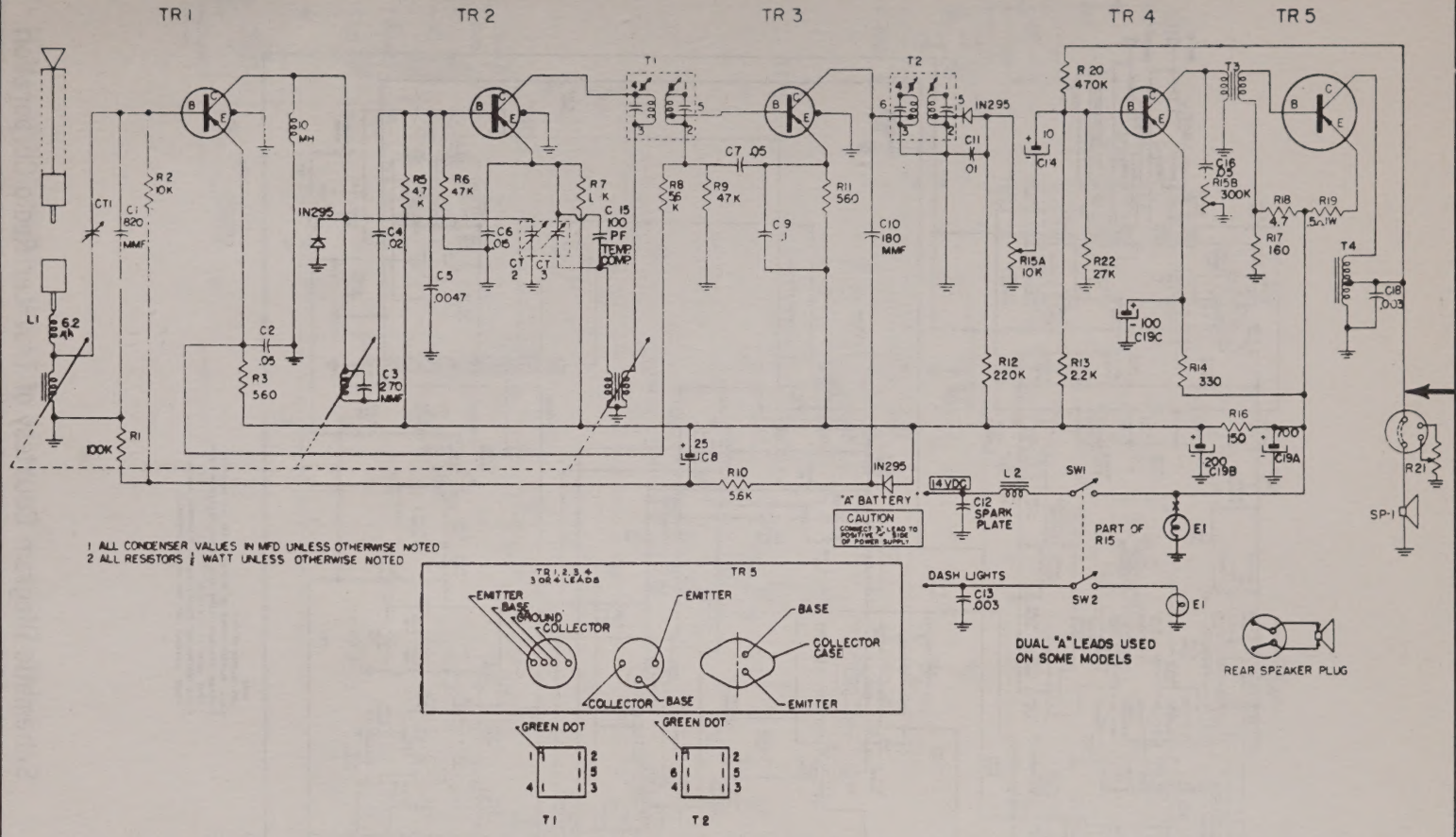
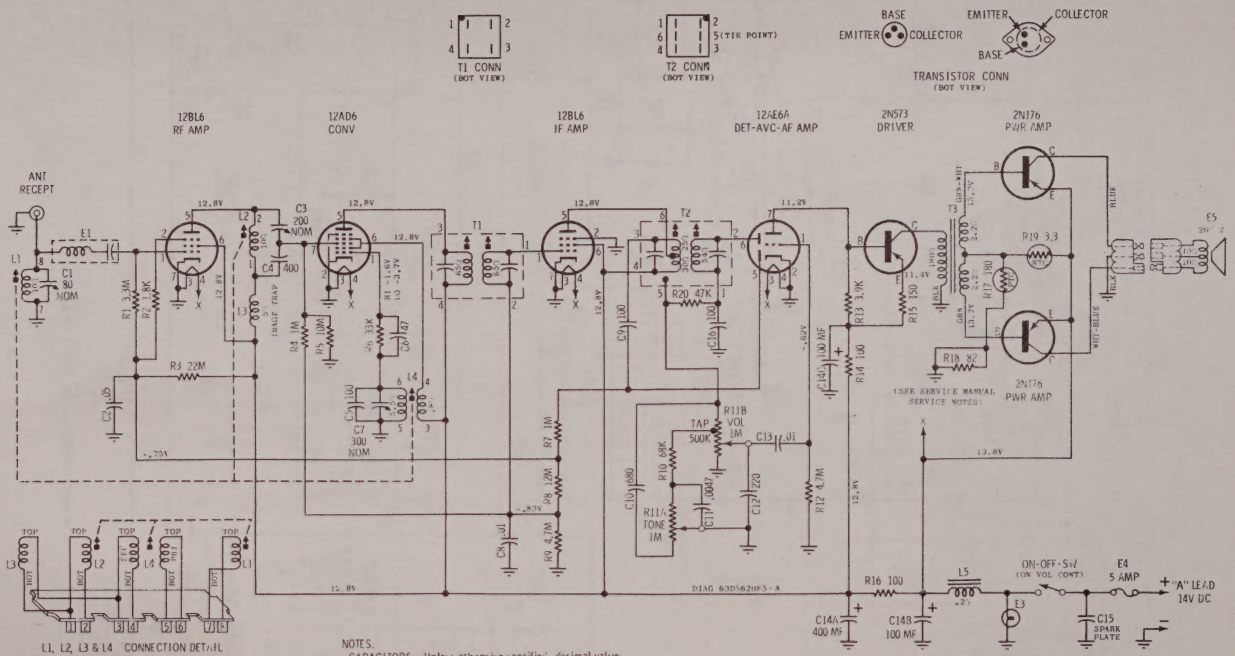


AUTOMATIC MODELS CP-511AT, OE-171AT, PC-361AT

Schematic Diagram Courtesy of Automatic Radio Mfg. Co., Inc.



NOTES.
CAPACITORS - Unless otherwise specified, decimal values in MF, all others in MMF.
VOLTAGES - Measurer from point indicated to chassis with a VTVM. No signal input. Tolerance ± 10%.
INPUT VOLTAGE - 14 V D C.
TUNING RANGE - 540 KC TO 1610 KC
IF - 262.5 KC

CAUTION

"A" LEAD MUST BE CONNECTED TO POSITIVE (+) SIDE OF POWER SUPPLY. RADIO WILL NOT OPERATE AND DAMAGE TO COMPONENTS WILL RESULT IF CONNECTED OTHERWISE.

INTERNATIONAL MODEL 04MI (244079-R91)

Schematic Diagram Courtesy of Motorola Inc.